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File No. S370-36

Systems

**OS/VS1
System
Data Areas**

Release 6

IBM

Sixth Edition (September 1976)

This edition, with Technical Newsletter SN24-5558, applies to Release 6 of OS/VS1 and to all subsequent releases until otherwise indicated in new editions or Technical Newsletters. Changes are continually made to the information herein; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370 Bibliography*, GC20-0001, for the editions that are applicable and current.

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This edition, SY28-0605-5, is a major revision of SY28-0605-4. Changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Summary of Amendments

Changes are described on page iii.

Information on the Extended Control-Program Support hardware function is included for planning purposes only until the availability of the IBM System/370 Models 135-3, 138, 145-3, 148, and 158.

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OS/VS1 Release 6

Previous TNLs None

OS/VS1 System Data Areas

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This Technical Newsletter, a part of Release 6 of OS/VS1, provides replacement pages for your publication. These replacement pages remain in effect for subsequent OS/VS1 releases unless specifically altered. Pages to be inserted and/or removed are:

Cover, ii
7-5 through 7-14

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

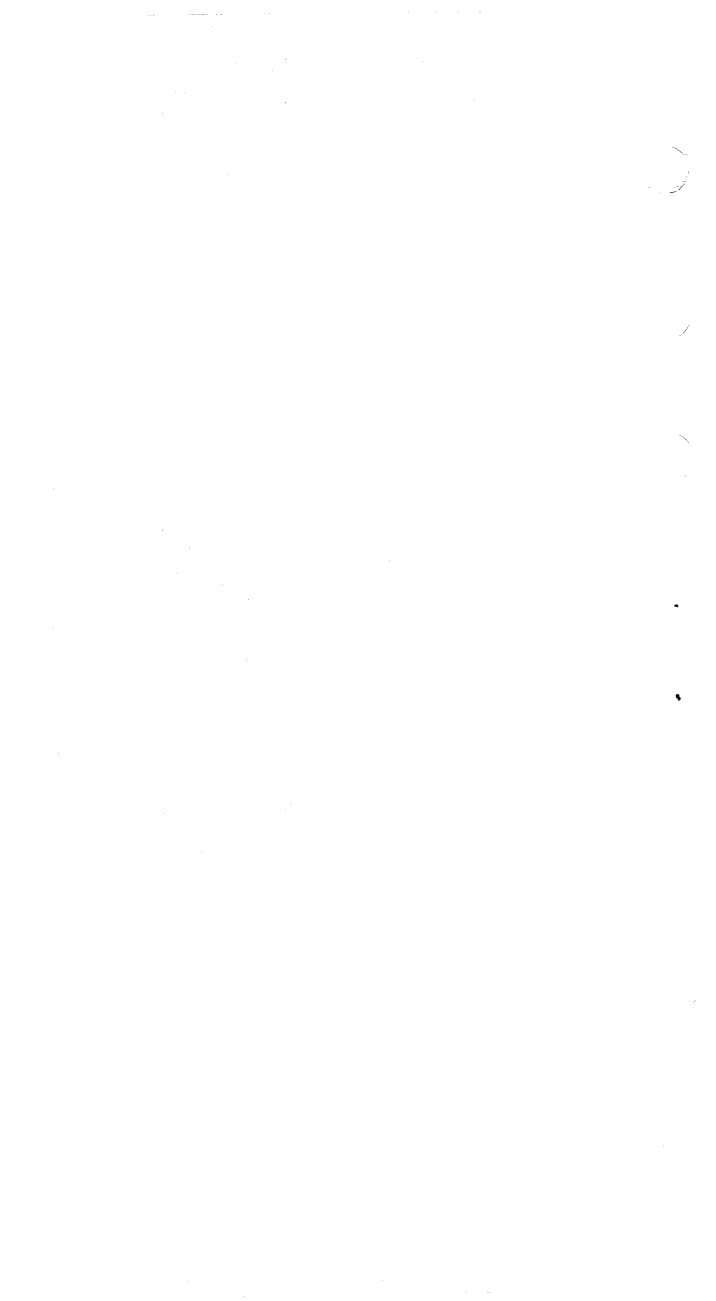
Release 6 supports the ECPS (Extended Control-Program Support) feature of the IBM System/370 Model 158. Information included in this Technical Newsletter is for planning purposes only until the availability of the IBM System/370 Model 158 ECPS feature. Also included are miscellaneous editorial changes.

Note: *Please insert this page in your publication to provide a record of changes.*

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Summaries of Amendments for OS/VS1 System Data Areas

Summary of Amendments for SY28-0605-5 OS/VS1 Release 6

PSIA Extension is added to this edition.

A Glossary of Acronyms with commonly used acronyms and their definitions has been added to this edition.

These data areas have changed:

<i>Release 6 Component</i>	<i>Data Areas Updated</i>
Channel-to-Channel Adapter Device Segment	UCB, UCBTYP Field
Page Service Request	PCB
ECPS (Extended Control- Program Support)	CVT, PSIA
3890 Support	DCB
RES Extended Support	ACB, CSCB, RPL
VTAM In a Problem Program Partition	CVT, TCB
Miscellaneous Technical and Editorial Changes	ACB, BBX, CSCB, CVT, DCB, DEB, DSCB, IOB, JFCB, MSRDA, PDS, PIE, PSIA, PTE, RB, SDWA, SMCA, TCB, TCT, TQE

Information on the Extended Control-Program Support hardware function is included for planning purposes only until the availability of the IBM System/370 Models 135-3, 138, 145-3, and 148.

Summary of Amendments for SY28-0605-3 as updated by SN24-5518 OS/VS1 Release 5

These data areas have changed:

<i>Release 5 Component</i>	<i>Data Areas Updated</i>
3350 Direct Access Storage	DCB, PDDT, UCBTYP
3800 Printing Subsystem	ACB, DCB, JFCB, RPL, TCB, UCB, UCBTYP
5098 Sensor Base Control Unit	UCBTYP
SVC Screening	TCB
Miscellaneous	CVT, MSRDA, PDS, PIB, RB, TCB, UCBTYP

Summary of Amendments for SY28-0605-3 OS/VS1 Release 4

The following data areas are new to this book:

- GQE (gotten queue element)
- IQE (interruption queue element)
- MSRDA (master scheduler resident data area)
- PFQE (protected free queue element)
- UCM (unit control module)

RB documentation has been changed; each type of request block is documented individually. They are all located under the RB heading.

This edition contains hex and decimal displacements for each field documented in the "Notes" section of each control block.

Additionally, the descriptions of these data areas have changed:

<i>Release 4 Component</i>	<i>Data Areas Updated</i>
VSAM	ACB, DSCB 4, EXLST, RPL
VM/370 Support	CVT
MSS	CVT, JFCB, UCBTYP
3890 Document Processor	DCB
3540 Diskette I/O Unit	ACB, DEB, IOB, RPL, UCB, UCBTYP
VTAM	ACB, EXLST, RPL, TCB
Checkpoint/Restart Enhancement	JFCB
ABEND/Indicative Dump	PIB, TCB
Alias Support	RB
Hot Reader	UCB
Miscellaneous Technical and Editorial Changes	BBX, DCB, DEB, DNT, PCB, PDS, PSIA, TCT

Information on the IBM 3850 Mass Storage System is included for planning purposes only until the product is available.

This publication contains reference information about the contents and format of system control blocks. The block descriptions are in alphabetic order by acronym.

A pointer diagram shows the addressing relationships between the major control blocks in the system.

Note: *For compatibility with the actual control blocks, certain fields describing non-supported functions or devices appear in this publication. This cannot be construed as a statement of IBM's intent to support such features or devices now or in the future.*

You should be familiar with the following publications:

IBM System/370 Principles of Operation, GA22-7000

OS/VS1 Data Management Services Guide, GC26-3874

OS/VS1 Supervisor Services and Macro Instructions,
GC24-5103

Terminology is defined in the *Data Processing Glossary*,
GC20-1699.

System Control Blocks

System control blocks are the primary means for communicating information among the major parts of the OS/VS1 control program. The information is stored in the control blocks in a highly compact, readily accessible form. These blocks have a standardized format, so that the information is usable by all parts of the control program. The addresses maintained in the control blocks permit the control program to locate other control blocks and tables.

This publication consists of descriptions of the major system control blocks. The block descriptions are ordered alphabetically by acronym. The field descriptions show the decimal and hexadecimal displacements of the fields.

MBBCHHR - Actual Address Format

In the operating system, the actual address for a location on direct access storage is expressed in the 8-byte format MBBCHHR. These eight bytes contain:

- M - The extent number. A 1-byte binary number specifying the relative location of an entry in a data extent block (DEB). Each extent entry describes a set of contiguous tracks allocated for the data set. For the first extent M=0 except when ISAM is used. In that case, M=1 for the first extent of user data.
- BB - The bin number. (This number is zero.)
- CCHH - The cylinder and track of a direct-access storage device.
- R - The record number. The number of a record on its track.

Control Block Format

All data areas are published in a graphic format. The layout for each field includes the decimal and hexadecimal (in parentheses) displacements, the name of the field, and a description of its contents. Occasionally several field names, each with its own meaning, occupy the same displacement within a control block. If several field names but only one meaning are shown, the names are aliases.

When applicable, notes appear at the end of a data area, or between sections of a large data area. These notes contain additional information about a field, most often flag byte settings. Bits are described in this manner:

- The eight bit positions (0 - 7) in a byte. For ease of scanning, the four high-order (left-hand) bits are separated from the four low-order bits.

x	A reference to bit 0.
1	Bit 0 is on.
0	Bit 0 is off.
.xx	A reference to bits 6 and 7.

Bit settings that are significant are shown and described. If the meaning of a field is "reserved," the use of the field has not yet been defined for OS/VS1. Any bit settings within reserved areas are irrelevant and should be ignored. Do *not* use the reserved fields because future features of OS/VS1 may use them.

Hex. Dig. (Hexadecimal Digits) - The contents of the field expressed as hexadecimal digits.

Examples:

- F F A 1-byte field with all bits on.
- 8 - A 1-byte field in which the high-order bit has a meaning independent of the setting of the 4 low-order bits.
- 0 A 1-byte field in which the off-state of the four low-order bits has a significance independent of the state of the four high-order bits.
- J - A general reference to the four high-order bits.
- K A general reference to the four low-order bits.

Field Description, Contents, Meaning - The use of the field. Where a field's contents relate directly to a value coded by (generally in job control statements) the value coded is shown under the heading:

Code - The value coded by you that resulted in the described contents.

Non-Supported Devices and Features

To maintain compatibility with the control blocks as they are mapped, fields describing non-supported devices and features are shown in this publication. They are indicated with an asterisk (*). These items are not to be construed as statements of IBM's intent to support the devices or features named.

How to Locate a Field

The control blocks appear in alphabetic order, according to acronym. To locate a particular field, you can take one of several paths. If you know the block name and the offset, you can go directly to the field description indexed by offset. If you know the name of the field, you can use the index to find the block name and page number.

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Virtual Storage Configuration

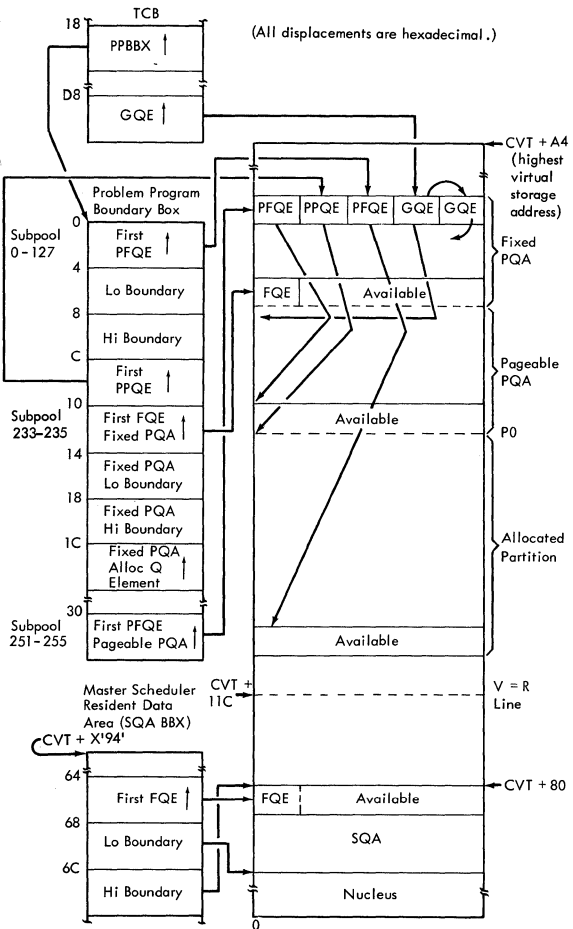


Figure 1. Virtual Storage Configuration

Control Block Flow and Relationship



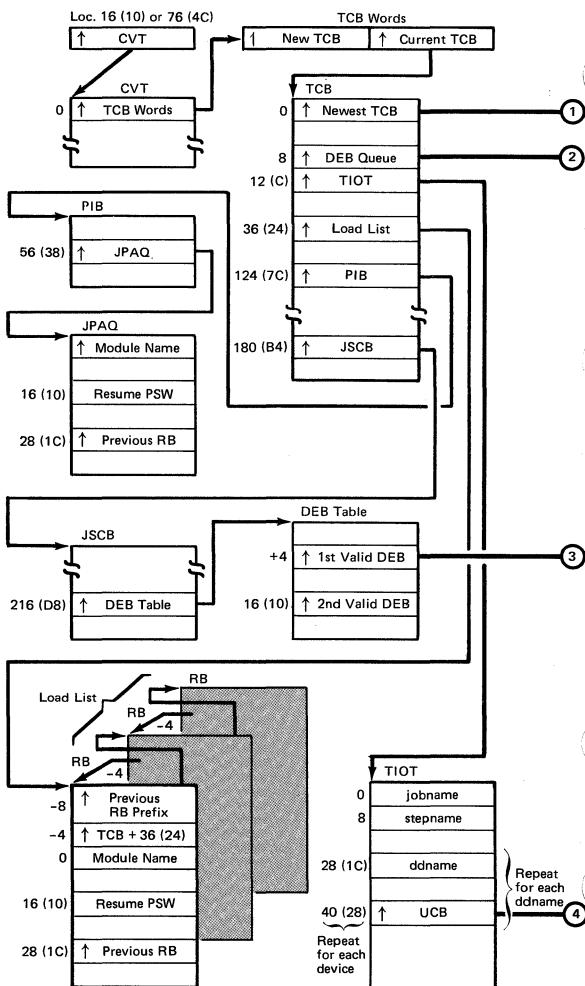


Figure 2. Control Block Flow and Relationship (Part 1 of 3)

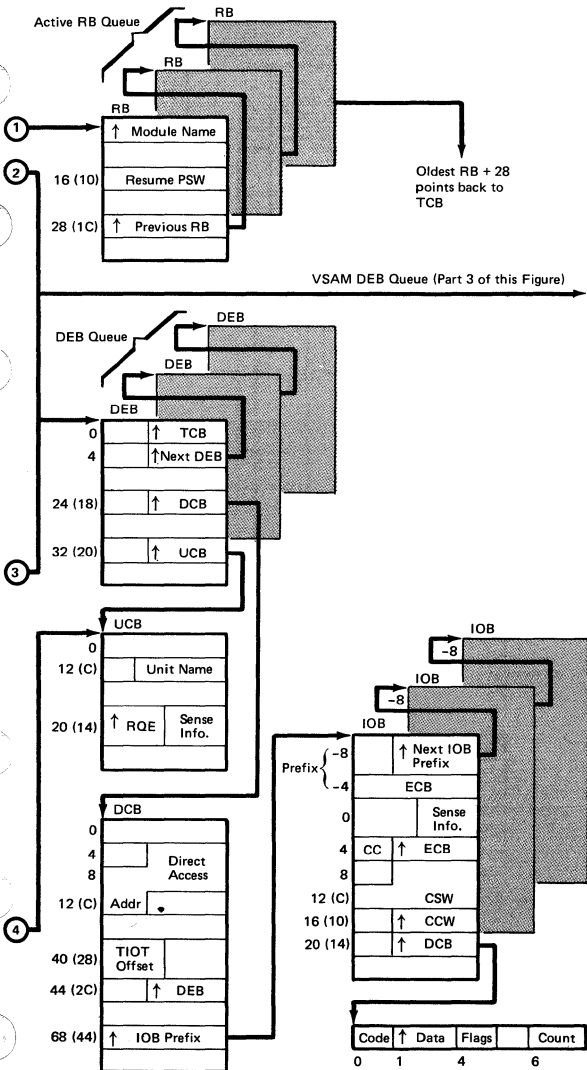


Figure 2. Control Block Flow and Relationship (Part 2 of 3)

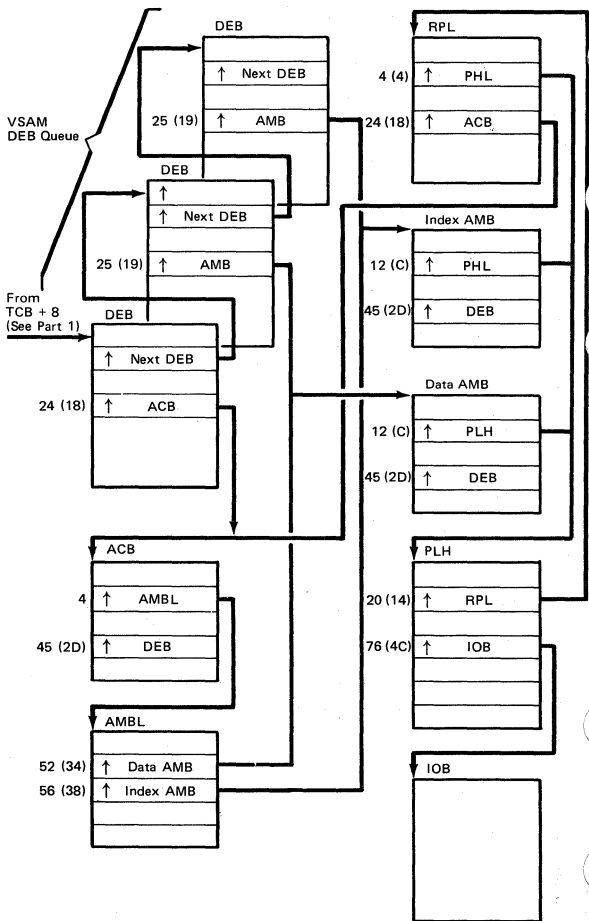


Figure 2. Control Block Flow and Relationship (Part 3 of 3)

ABDUMP Parameter List

(Pointed to by register 1 upon entry to ABDUMP)

0 (0) PID - ID number	1 (1) reserved	2 (2) PFLAGS - option flags (see note 1)
4 (4) set to zero	5 (5) PDCBPTR - address of DCB (ABDUMP request), or PARMHDR - header (SVC dump request)	
8 (8) Dump indicator X'00' = ABDUMP X'80' = SVC dump	9 (9) PTCBPTR - address of TCB	
12 (C) set to zero	13 (D) PSNAPPTR - address of snapshot list	
16 (10) PWORKPTR - address of work area (ABDUMP request only)		
		19 (13)

Note 1:

Flag Field	Bit	Mask Name	Meaning
PFLAGS 2 (2)	Byte 1		Option flags
	1... ..	PFABEND	SNAP request
	0... ..		ABEND request
	.1.. ..	PFTCB	TCB address is given
	..1.	PFSUPDAT	Display all supervisor data
	...1	PFTRACE	Display trace table (if possible)
	.... 1...	PFNUC	Display supervisor amd SQA
	.... .1..	PFSNAP	Snapshot list is given
	.... ..1.	PFID	ID is given
	.... ...x	PFQCB	Reserved bit
	Byte 2		
	1... ..	PFSAVE	Save area (used with bit 1)
	.1.. ..	PFSAVE2	Display save area headings only
	.0.. ..		Display entire save area
	..1.	PFREGS	Display registers on entry to ABEND or SNAP
	...1	PFLPA	Display modules in LPA used by task being dumped
	.... 1...	PFJPA	Display job pack area queue
	.... .1..	PFPSW	Display PSW on entry to ABEND or SNAP
	.... ..1.	PFPALL	Display all virtual storage assigned to the job-step task
	.... ...x		Reserved bit

Access Method Control Block (ACB)

(Pointed to by RPLDACB [RPL + 24]; mapped by IEGACB)

The ACB describes the current use of a VSAM data set. In VS1, the ACB describes the current use of a data set when the job entry subsystem (JES) is being used for input/output control. In VTAM, the ACB represents a processing application.

The control block consists of an area common to all users and a contiguous extension created for VTAM or 3540 Diskette. The VTAM extension is generated if AM=VTAM is specified in the ACB macro instruction. If you specify AM=3540, the 3540 extension is generated.

0 (0) ACBID - ACB identifier; set to X'A0'	1 (1) ACBSTYP - ACB subtype (see note 1)	2 (2) ACBLENG - ACB length in bytes	
4 (4) ACBAMBL - address of VSAM AMBL, ACBJWA - address of JES work area, ACBIBCT - address of IBCT, ACBIXLST - address of index list			
8 (8) ACBINRTN - VTAM request processor address, or data management interface routine address			
12 (C) ACBMACR1 - flag byte (see note 2)	ACBMACRF ACBMACR2 - flag byte (see note 3)	14 (E) ACBBSTNO - no. of concurrent strings for AIX path	15 (F) ACBSTRNO - no. of concurrent request strings
16 (10) ACBBUFND - number of data record buffers		18 (12) ACBBUFNI - number of index record buffers	
20 (14) ACBMACR3 - flag byte (see note 4)	ACBBUFPL - JES buffer pool address, or ACBMACR4 - reserved	ACBJBUF - number of VSAM journal buffers	
24 (18) ACBRECFCM - record format; (see note 5)	25 (19) ACBCCTYP - control character type (see note 6)	26 (1A) ACBDSORG/ACBOPT ACBDSOR1 - chkpt/restart options (see note 7)	ACBDSOR2 - DSORG options; X'08' = ACB indicator
28 (1C) ACBMSGAR - message area address			
32 (20) ACBPASSW - address of data set password			
36 (24) ACBEXLST/ACBUEL - address of user exit list			

Before OPEN:

40 (28)

ACBDDNM - DD name; must be same as name used in DD statement defining data set associated with this ACB. Field initialized to X'FF00000000000000' for VTAM.

47 (2F)

After OPEN:

40 (28) ACBTIOT - offset in TIOT to TIOELNGH for DD statement for this ACB	42 (2A) ACBINFL - flag byte (see note 8)	43 (2B) ACBAMETH - access method type (see note 9)
44 (2C) ACBERFL - JES error flags (see note 10)	45 (2D) ACBDEB - address of DEB	

Not moved by OPEN:

48 (30)

ACBOFLGS - OPEN/CLOSE flags (see note 11)

Before OPEN:

	49 (31) ACBERFLG - VSAM/VTAM error flags (see note 10)	50 (32) ACBINFLG - flag byte (see note 8)	51 (33) Reserved
52 (34) ACBOPTN - JAM UCS indicator	53 (35) ACBUJFCB - address of user JFCB		
56 (38) ACBBUFSP - amount of virtual storage available for buffers			
60 (3C) ACBBLKSZ - block size requested by user, or ACBMSGLN - length of message area		62 (3E) ACBLRECL - logical record length	
64 (40) ACBUAPTR - address of user workarea, or CAXWA address for catalog open			

68 (44)

ACBCBMWA - address of control block manipulation work area

72 (48)

ACBAPID - address of VTAM application ID

75 (4A)

VTAM Extension

(Mapped by IFGACB AM = VTAM)

76 (4C)

ACBRTN - if VTAM is inactive, ACBINRTN (X'08') contains a pointer to this field, which sets a return code and returns to the caller. The contents of this field are LA 15, 32, and BR 14 instructions.

82 (52)

Reserved

84 (54)

Reserved

87 (57)

3540 Diskette I/O Unit Extension

(Mapped by IFGACB AM = 3540)

76 (4C)

ACBDSID - data set identifier

83 (53)

84 (54)

ACBJOBID - job identifier

91 (5B)

92 (5C)

ACBVSSER - volume identifier

98 (62)

ACB35IND - 3540 indicators
(see note 12)

99 (63)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. ACBSTYP 1 (1)	0100 0000 0010 0000 0001 0001 0001 0000	ACBS3540 ACBSVTAM ACBSVRP ACBSVSAM	ACB subtype: 3540 VTAM VRP VSAM
2. ACBMACR1 12 (C)	1... .. .1... .. ...1... .. ...1... .. ...1... .. ...1... .. ...1... .. ...1... ..	ACBKEY ACBADR ACBADD ACBCNV ACBBLK ACBSEQ ACBDIR ACBIN ACBOUT ACBUBF	MACRF first byte: Keyed processing via index. Addressed processing without index. Processing by control interval. Sequential processing. Direct processing Input processing using GET or READ. Output processing using PUT or WRITE. User control buffers; valid with control interval processing only.
3. ACBMACR2 13 (D)	...1... .. ...1... .. ....1... .. ....1... .. ....1... .. xxx.	ACBSKP ACBLOGON ACBRST ACBDSN ACBAIX	MACRF second byte: Skip sequential processing. LOGON requests to an application will be rejected. Set data set to empty state. Basic subtask shared control block connection on common data set names. Entity to be processed is AIX of the path specified in the given ddname. Reserved bits.
4. ACBMACR3 20 (14)	.1... .. .1... .. ...1... .. ...1... .. ...1... .. ...1... .. ...0... .. x... ..x	ACBLSR ACBGSR ACBICI ACBDFR ACBSIS ACBNCFX	MACRF third byte: Local shared resource. Global shared resource (VS2 only). Improved control interval processing. Defer writes. Sequential insert strategy. CFX NFX Reserved bits.
5. ACBRECFCM 24 (18)	1... .. .1... .. ...1... .. .x...xxx	ACBRECAF ACBCPACT ACBPDIR	Record Format JES Format. Compaction table name must be passed (JES/RES). PDIC must be passed (JES/RES). Reserved bits.
6. ACBCCTYP 25 (19)	11... .. ....1... .. ....1... .. ...x x...x	ACBTRCID ACBCCASA ACBCCMCH	Control character type 3800 Printing Subsystem translate table. ASA control characters. Machine control characters. Reserved bits.
7. ACBDSOR1 26 (1A)	xx... .. 1... .. .1... .. ...x... .. ...1... .. ...x xxxx	ACBCROPS ACBCRNCK ACBCRNRE ACBDVIND ACBOPTJ	Checkpoint/restart options: Restart has not checked for modifications since last checkpoint. Data added since last checkpoint has not been erased by restart, and no reposition to last checkpoint takes place. Device indicator: 3800 Printing Subsystem table reference character present. Reserved bits.

8. ACBINFL
42 (2A)
ACBINFLG
50 (32)

.1. ACBJEPS
..1. ACBIJRQE
...1 ACBCAT
.... 1... ACBSCRA
.... .1.. ACBUCRA
.... .1. ACBVVIC
.... ACBSDS
.... ..1 ACBBYPSS
x... ..

Flag byte used before OPEN (ACBINFLG, offset X'32') and after OPEN (ACBINFL, offset X'2A'):

JEPS is using this ACB.
An RQE is held by JAM.
ACB for VSAM catalog.
Catalog control block system area.
Catalog control block user area.
Data set being opened is usercat.MSV1.
Open as system data set.
Bypass security on open if user authorized.
Reserved bits.

9. ACBAMETH
43 (2B)

0110 0000 ACBVTAM
0100 0001 ACBSUBS
0011 0001 ACBTCAM
0010 0011 ACBRCI
0010 0010 ACBRTAM
0010 0001 ACBJAM
0001 0001 ACBVSAM
x... xx..

Access method type:

VTAM
Subsystems
TCAM
JES/RCI
JES/RTAM
JES/JAM
VSAM
Reserved bits

10. ACBERFL
44 (2C)

00..
01..
11..
..10
..01
.... 00..
.... 01..
.... 10..
.... 11..
.... ..xx

JES/VSAM/VTAM error flags:
JES flags: after OPEN, ACBERFLG;
before OPEN, ACBERFLG.

Not in error procedure.
Error correction in progress.
Permanent error condition.
Channel 9 punch sensed in printer carriage tape.
Channel 12 punch sensed in printer carriage tape.
Always use I/O supervisor error routine.
Never use I/O supervisor error routine.
Never use I/O supervisor error routine.
Never use I/O supervisor error routine.
Reserved bits.

ACBERFLG
49 (31)

1011 1100
1011 1000
1011 0100
1011 0000
1010 1000
1010 0100
1010 0000
1001 1000
1001 0100
1001 0000

VSAM error flags:

The data set indicated by the ACB is not of a type that may be specified by an ACB.
An uncorrectable I/O error occurred while CLOSE was completing outstanding I/O requests.
A VSAM catalog specified in the JCL either does not exist or is open, and no record for the data set to be opened was found in any other catalog.
An error occurred while VSAM was attempting to fix a page of virtual storage in real storage.
The data set is not available for the type of processing specified.
An uncorrectable I/O error occurred while reading the volume label.
The operands specified in the ACB or GENCB macro are inconsistent with each other or with the information in the catalog record.
Security verification failed; the password specified for the desired level of access does not match the password in the catalog for that level of access.
No record for the data set to be opened or closed was found in the available catalog(s).
An uncorrectable I/O error occurred while reading or writing a catalog record.

1000 1000		Not enough virtual storage space was available in the caller's address space for work areas, control blocks, and/or buffers.
1000 0100		An uncorrectable I/O error occurred while reading or writing the JFCB.
1000 0000		The DD statement is missing, or the DD name does not match that given in the ACB.
0111 0100		The data set was not properly closed.
0110 1100		The time stamps of a data set and its index do not agree, indicating that one has been updated separately from the other.
0110 1000		The time stamp of a data set's volume does not match the time stamp of the data set's catalog record. The extent information in the catalog record may not agree with the actual extents of the data set.
0000 0100		The ACB was already open (for OPEN), or it was not open (for CLOSE and TCLOSE).
0000 0000		No error.
<u>VTAM error flags:</u>		
1011 1100	ACBCBUSY	The ACB is busy.
	ACBOACT	The ACB is active.
0111 0000	ACBTVTCL	VTAM cleanup in process for requested APPLID.
0110 1000	ACBRNOOF	Open failed because a primary POA issued an open ACB while another primary POA was active.
0110 0110	ACBOPWLE	The password length is invalid.
0110 0100	ACBOPWSE	The password is not in the requestor's space.
0110 0010	ACBOAPLE	The application-ID length is invalid.
0110 0000	ACBOUNDF	Intermittent error
0101 1110	ACBOAPSE	The application-ID is not in the requestor's space.
0101 1100	ACBOVINA	VTAM is in the system but not active.
0101 1010	ACBOAPNM	No matching application-ID entry exists.
0101 1000	ACBOAPAA	The application is already active.
0101 0110	ACBOANSN	A non-application-ID name was specified.
0101 0100	ACBOAVFY	Application verification failed.
0101 0010	ACBOAHLT	VTAM is active but halting.
0101 0000	ACBOANAT	VTAM is not active.
0100 1100	ACBRNOCF	Close failed because POI queue not empty or replies outstanding.
0100 0010	ACBCDSNR	Destinations are not released.
0100 0000	ACBCAQNR	Outstanding acquires are not released.
0000 0100	ACBCALR	The ACB is not open.
0000 0100	ACBOALR	The ACB is already open.
11. ACBOFLGS		OPEN/CLOSE flags:
48 (30)		EOV concatenation.
...1	ACBEOV	The ACB is open.
...1	ACBOPEN	No further requests are possible against this ACB.
... 1...	ACBDSERR	Set on return from user exit to I/O support routine.
... ..1.	ACBEXFG	Set by I/O support function when that function takes a user exit.
... ..0.		Alternate name for ACBEXFG (VTAM).
... ..1	ACBLOCK	OPEN/CLOSE in control; the ACB is being processed by an I/O support function.
... ..1	ACBIOFSG	Alternate name for ACBIOFSG (VTAM).
... ..1	ACBBUSY	Reserved bits.
xx.. .x..		
12. ACB35IND		3540 Diskette I/O Unit indicators:
98 (62)		Feed new diskette.
1...	ACBFEED	Data set is secure.
.1..	ACBSECUR	Reserved bits.
..xx xxxx		
99 (63)	xxxx xxxx	Reserved

Boundary Box (BBX)

(Mapped by IEABBX)

SQA Boundary Box

(Located in master scheduler resident data area (MSRDA), beginning at location X'64'; the MSRDA is pointed to by CVTMSER, offset X'94' in the CVT.)

0 (0)	BBXFQP - address of first FQE
4 (4)	BBXL0L - starting address of original SQA
8 (8)	BBXHIL - ending address of original SQA
11 (B)	

Problem Program Partition Boundary Box

(Pointed to by TCBMSS in job step TCB, offset X'19')

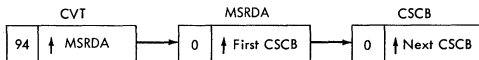
-16 (-10)	QNXTREQ - address of next QNXTREQ field on transient area request queue
-12 (-C)	QSVRB - address of this SVRB request
-8 (-8)	ABEND appendages
-1 (-1)	
0 (0)	BBXUSFQP - address of first PFQE for problem program
4 (4)	BBXPTL0L - starting address of virtual partition
8 (8)	BBXPTHIL - ending address of virtual partition

12 (C)	BBXUSPQP - address of first PPQE	
16 (10)	BBXFPPQP - address of first FQE for fixed PQA	
20 (14)	Starting address of originally allocated PQA	
24 (18)	Ending address of originally allocated PQA	
28 (1C)	BBXFPPQP - address of first PQA allocation queue element	
32 (20)	BBX11ENT - save area for problem program boundary box while running V=R	47 (2F)
48 (30)	BBXPPFQP - address of first PFQE for pageable PQA	
52 (34)	reserved	
56 (38)	ABEND steal storage address of temporary SQA page	
60 (3C)	reserved	63 (3F)

Command Scheduling Control Block (CSCB)

(Mapped by IEECHAIN)

How to find a CSCB (pointers in hex)



0 (0) CHPTR - address of next CSCB in chain									
4 (4) CHVCD - command verb code (see note 1)				CHFLG CHSIZE - size of this CSCB in doublewords		CHSTS . status flags (see note 2)		CHACT activity flags (see note 3)	
8 (8) CHKEY - ID of started task (task's stepname), or - jobname of an executed job, or CHPARM - address of parameter list used for communication between SVC 34 commands and master scheduler tables (CHPARM is a 4-byte field). - if offset X'08' = X'80', DISPLAY command of a subsystem command interface is being processed.									
16 (10) CHCLS - procname of a started task (task's jobname), or - jobname of an executed job (same as CHKEY)									
24 (18) CHUNIT - unitname (set for started tasks only)								27 (1B) CHCIBCTR maximum number of queued CIBs	
28 (1C) CHPKE protect key			29 (1D) CHUCMP UCM indicator - ID of console			30 (1E) CHTJID - terminal ID			
32 (20) CHQID - QID of remote user						34 (22) CHARSV03 reserved		35 (23) CHACT1-flag byte (see note 4)	
36 (24) CHDER - TTRL of DER for this job									
40 (28) CHECBP - address of STOP/MODIFY ECB									

44 (2C) CHCIBP - address of CIB	
48 (30) CHRPRTY - new priority of job whose priority has been reset	49 (31) CHARSV18 - reserved
52 (34) CHARSV19 - reserved	
56 (38) CHECB - STOP/MODIFY ECB	
60 (3C) CHCECB - CANCEL ECB	
64 (40) CHSWT communication switches (see note 5)	65 (41) CHTCB - address of TCB
68 (44) CHSPB - address of TCB for abnormal termination	
72 (48) CHSPC - address of small partition list, or - transient reader TTR, or - completion code for abnormal termination	
76 (4C) CHJCL - JCLS pointer, or - resident JCT address (DA JCT TTR)	
80 (50) CHQPA - input queue manager parameter area	
115 (73)	
116 (74) CHSQA - SYSOUT queue manager parameter area	
159 (9F)	
160 (A0) CHUSCVS - TIOT length	

164 (A4)	CHJSCBVS - address of JSCB
168 (A8)	CHARSV15 - reserved
172 (AC)	CHARSV16 - reserved
175 (B3)	

ORG '28' Overlay Segment

40 (28)	CHBUF - command image (operand field)			163 (A3)
164 (A4) CHTYPE flag byte (see note 6)	165 (A5) CHLSQA - no. of segments of LSQA needed by START command	166 (A6) CHCNID display-receiving console ID	167 (A7) CHARID display screen-area ID	
168 (A8) CHPEND - chain pointer for pending SCMs				
172 (AC) CHINC - unique counter for interpreter	174 (AE) CHCSYSO express cancel SYSOUT (see note 7)		175 (AF) CHSPA reserved	

1. CHVCD
4 (4)

<u>Code</u>	<u>Meaning</u>
X'04'	START
'0C'	MOUNT
'10'	REPLY
'18'	WRITE or WTR
'1C'	LOG
'20'	WRITELOG
'24'	SET
'28'	VARY
'2C'	UNLOAD
'30'	SWAP
'34'	SWITCH
'38'	STOPMN
'3C'	HALT
'40'	STOP
'44'	MODIFY
'48'	CANCEL
'4C'	MODE
'64'	MONITOR
'68'	DISPLAY
'6C'	HOLD
'70'	RELEASE
'74'	RESET
'78'	DEFINE
'78'	MSG
'7C'	CENOUT
'80'	BRDCST
'84'	USERID
'88'	SHOW
'90'	CONTROL
'94'	MSGRT
'98'	LOGON
'9C'	LOGOFF
'A0'	SEND
'AC'	DUMP
'B0'	ROUTE
'C0'	LISTBC
'C8'	PAGETUNE

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
2. CHSTS 6 (6)	1... .. .1.. .. ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	CHAP CHSYS CHSOUT CHQSPC CHAD CHDL CHFC CHABTERM	Status flags: Assignment pending. System task CSCB. Cancel all SYSOUT. Insufficient queue space, causing ABEND 422. Add this CSCB to chain. Delete this CSCB from chain. Free this CSCB's storage. Execute branch entry to ABTERM.
3. CHACT 7 (7)	1... .. .1.. .. ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	CHSWAP CHTERM CHDISC CHDSI CHCL CHCLD CHAIFX CHIFY	Flag byte: Swappable job. Terminal job. Cancel implies disconnect. No data set integrity. Cancelable job step. Cancel communication switch. Cancelable. System-assigned procedure.
4. CHACT1 35 (23)	1... .. ..1. .... ..xx xxxx	CHRDWTR CHMODIFY	Command was start reader or writer. Task can be modified by remote user. Reserved bits.
5. CHSWT 64 (40)	.1.. .. ..1. .... ...1 1... x... .xxx	CHJCT CHPSD CHPSF CHAC	Communications switches: Reader return with resident JCT. Writer pause data set. Writer pause forms. ID specified on S command. Reserved bits.
6. CHTYPE 164 (A4)	1... .. .... .1.. .... ..1. xxx xx..	CHDSTAT CHHIAR CHDEF	Flag byte: Status display (SVC 104) command H1 specified on command. Default to H0. Reserved bits.
7. CHCSYSO 174 (AE)	1... .. .1.. .. ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	CHALL CHINN CHOUT CHHOLD CHQUE CHDUMP CHJB CHUSERID	Express, CANCEL, SYSOUT: ALL specified. IN specified. OUT specified. HOLD specified. Specific queue. DUMP specified. End scan. USER = specified on CANCEL.



Communication Vector Table (CVT)

(Pointed to by location X'10' in real storage; mapped by CVT DSECT=YES, LIST=YES, SYS=AOS1)

-8 (-8) Reserved	- 6 (6) CVTMDL - model ID (for example 0145=Model 145)
-4 (-4) CVTRELNO - release number in EBCDIC	
0 (0) CVTTCBP - pointer to address for next and current TCB (identical unless in WAIT state)	
4 (4) CVTOEF00 - address of routine to schedule asynchronous exits	
8 (8) CVTLINK - address of DCB for SYS1.LINKLIB	
12 (C) CVTJOB - address of queue manager resident data area	
16 (10) CVTBUF - address of buffer for resident console interruption routine	
20 (14) CVTXAPG - address of IOS appendage vector table	
24 (18) CVTOVL00 - address of entry point of address validity checking routine (task supervisor)	
28 (1C) CVTPCNVT - address of entry point of routine for converting relative track address to absolute (TTR to MBBCCHHR)	
32 (20) CVTPRLTV - address of entry point of routine for converting absolute track address to relative (MBBCCHHR to TTR)	
36 (24) CVTILK1 - address of channel and control unit section in UCB Lookup Table	
40 (28) CVTILK2 - address of UCB address list portion in UCB Lookup Table	

44 (2C)	CVTXTLER - address of entry point to XCTL routine to bring system error routines into error transient area	
48 (30)	CVTSYSAD - address of system residence volume entry in UCB Lookup Table	
52 (34)	CVTBTERM - address of entry point of ABTERM routine	
56 (38)	CVTDATE - current date in packed decimal	
60 (3C)	CVTMSLT - address of master common area of master scheduler resident data area (see note 1)	
64 (40)	CVTZDTAB - address of I/O device characteristic table	
68 (44)	CVTXITP - address of error interpreter routine	
72 (48) CVTFLGS1 - flag byte (see note 2)	73 (49) CVTDARA - address of SYS1.DUMP I/O control blocks for ABEND DAR	
76 (4C)	CVT0FN00 - entry point address to FINCH	
80 (50) CVTEXTIT - an SVC 3 instruction	82 (52) CVTBRET - a BCR 15, 14 Instruction	
84 (54)	CVTSVDCB - address of DCB for SYS1.SVCLIB	
88 (58)	CVTTPC - address of timer supervisor work area	
92 (5C)	CVTPBLDL - address of BAL entry point to BLDL routine	

96 (60)	CVTSJQ - address of selected job queue
100 (64)	CVTCUCB - address of table with console UCB address (UCM)
104 (68)	CVTQTE00 - address of timer enqueue routine
108 (6C)	CVTQTD00 - address of timer dequeue routine
112 (70)	CVTSTB - address of I/O device statistics table
116 (74)	CVTDCB - system configuration, address of DCB for SYS1.LOGREC (see note 3)
120 (78)	CVTIOQET - address of request element table
124 (7C)	CVTIXAVL - address of IOS freelist pointer to next request element
128 (80)	CVTNUCB - lowest storage address not in nucleus (page boundary)
132 (84)	CVTFBOSV - address of program fetch routine
136 (88)	CVT0DS - address of entry point of dispatcher
140 (8C)	CVTILCH - address of logical channel word table
144 (90)	CVTIERLC - address of asynchronous exit queue

148 (94)	CVTMSER - address of master scheduler resident data area (see note 1)	
152 (98)	CVTOPT01 - address of branch entry point for POST routine	
156 (9C)	CVTRSV11 - reserved	
160 (A0)	CVTHEAD - address of highest priority TCB in ready queue	
164 (A4)	CVTMZ00 - highest virtual storage address in machine	
168 (A8)	CVT1EF00 - address of IRB creation routine	
172 (AC)	CVTQOCR - address of seventh word of graphics interface task (GFX) parameter list, or zeros	
176 (B0)	CVTQMWR - address of allocation/termination communication area	
180 (B4)	CVTSNCTR - counter for assigning serial numbers to nonspecific, un- labeled tape volumes	182 (B6) CVTOPTA option indicators (see note 4)
		183 (B7) CVTOPTB option indicators (see note 5)
184 (B8)	CVTQCDSR - address of routine to search reenterable load module queue	
188 (BC)	CVTQLPAQ - address of reenterable load module queue	
192 (C0)	CVTRSV18 - reserved	
196 (C4)	CVTSMCA - address of SMCA or zeros	

200 (C8) CVTABEND - information for ABEND trace routine (see note 6)	
204 (CC) CVTUSER - field available to the user	
208 (D0) CVTMDLDS - reserved	
216 (D8) CVTTSCE - address of first time slice control element (TSCE)	
220 (DC) CVTPATCH - address of IEAPATCH (patch area)	
224 (E0) CVTRMS - RMS Communications Vector - address of machine status block	
228 (E4) CVTTSFLG X'80' = time-sharing ready	229 (E5) CVTTSCVB - address of time-sharing CVT
232 (E8) CVT0SCR1 - address of RPS sector calculation routine	
236 (EC) CVTGTFTST GTF flag byte (see note 7)	237 (ED) CVTGTFB - address of monitor call vector table
240 (F0) CVTTCMFG TCAM flag byte (see note 8)	241 (F1) CVTAQAVB - address of first word of TCAM dispatcher which contains AVT address (if zero, TCAM has not been started)
244 (F4) CVTTSKS max. no. of entries in TCB address table	245 (F5) CVTTAT - address of first entry in TCB address table - first entry is for partition 0
248 (F8) CVTSYST no. of TCBs created at SYSGEN	249 (F9) CVTATERA - address of system error TCB

252 (FC) CVTEXT1 - address of OS, VS Common Extension	
256 (100) CVTCBSP - address of AMCBS (if zero, VSAM master catalog is not open and not available)	
260 (104) CVTRSV35 reserved	261 (105) CVTPURGA - address of subsystem purge routine
264 (108) CVTAMFF - access method flags (see note 9)	
268 (10C) CVTRSV36 reserved	269 (10D) CVTQMSG - address of information to be printed by ABEND
272 (110) CVTRSV37 reserved	273 (111) CVTDMSRA - address of OPEN/CLOSE/EOV routine in nucleus
276 (114) CVTRSV38 - reserved	
280 (118) CVTRSV39 - reserved	

OS/VS1, OS/VS2 COMMON SECTION

284 (11C) CVTREAL - first virtual storage byte following V=R area	
288 (120) CVTPTRV - address of page supervisor rtn. to change real addresses to virtual (IEAPTRV)	
292 (124) CVTMODE - address of routine to change system mask	
296 (128) CVTJESCT - address of JES communications table	

300 (12C) CVTJEPS - address of JEPS monitor TCB	
304 (130) CVTTZ - difference between local time and Greenwich Mean Time in binary units of 1.048576 seconds	
308 (134) CVTMCHPR - address of machine check parameter list	
312 (138) CVTEORM - highest real storage address	
316 (13C) CVTERPV - address of IOS rtn. to convert CCW data addresses to virtual addresses	
320 (140) CVTINTLA - address of I/O load balancing time interval	
324 (144) CVTRSV40 reserved	325 (145) CVTAPFA - address of branch entry point in authorized program facility (APF) routine
328 (148) CVTRSV41 reserved	329 (149) CVTEXT2 - address of OS/VS1, OS/VS2 Common Extension
332 (14C) CVTRSV42 reserved	333 (14D) CVTHJESA - address of optional JES CVT
336 (150) CVTRSV43 - reserved	338 (152) CVTRSV44 - reserved
340 (154) CVTRSV45 - reserved	
344 (158) CVTRSV46 - reserved	
347 (157)	

348 (15C) CVTPGSIA - address of page supervisor information area		
352 (160) CVTPCVT - address of pageable CVT		
356 (164) CVTAIF1 page fault flags (see note 10)	357 (165) CVTSYSK system lock flags (see note 11)	358 (166) CVTSULK - no. of tasks attempting to execute disabled routines (if not zero, only enabled tasks may run)
360 (168) CVTSMF - address of SMF TCB		
364 (16C) CVTPNWFR - address of routine which frees emergency work area		
368 (170) CVTDDCE - address of dynamic dispatching control element		
372 (174) CVTRSV57 - reserved		374 (176) CVTRSV58 - reserved
376 (178) CVTSTOA - save area for real storage address of segment table origin		
380 (17C) CVTVOLF1 - X'80' = power warning feature not initialized	CVTVOLM1 (see note 12) CVTVOLT1 - power warning feature time delay parameter (see note 12)	
384 (180) CVTSU - address of SU bit string; initialized to V (IEAIHASU)		
388 (184) CVTRV490 - reserved		
392 (188) CVTAUTH - address of authorized library table		
396 (18C) CVTACTAP - address of branch entry to VTAM SVC routine; initialized to V (ISTAPC42)		
400 (190) reserved		

415 (19F)

OS, VS COMMON EXTENSION (pointed to by CVTEXT1 - offset X'FC')

0 (0)	CVTFACHN - address of chain of DCB fields (ISAM)
4 (4)	reserved
11 (8)	

OS/VS1, OS/VS2 COMMON EXTENSION (pointed to by CVTEXT2 - offset X'148')

0 (0) CVTRSV89 reserved	1 (1) CVTDSSVA - address of Dynamic Support System (DSS) vector table	
4 (4) CVTNUCLS identification of nu- cleus member name	5 (5) CVTFLGBT - VM flags (see note 13)	6 (6) reserved
8 (8) CVTDEBVR - address of entry point of DEB validity check routine		
12 (C) CVTRSV92 - reserved		
16 (10) CVTRSV93 - reserved		
20 (14) CVTRSV94 - reserved		
24 (18) CVTRSV95 reserved	25 (19) CVTQIDA - address of queue identification (QID) table prefix	
28 (1C) CVTOLTEP - pointer to control block created by SVC59 to point to pseudo - DEBs		
32 (20) reserved		

43 (28)

44 (2C) CVTSKTA - address of storage key table (VM environment)	
48 (30) CVTICB - address of ICBSS1CB, the MSSC (Mass Storage System Communicator) control block	
52 (34) reserved	
64 (40) CVTATCVT	65 (41) CVTATCVT - address of AVT (VTAM address vector table)
68 (44) reserved	
127 (7F)	

PAGEABLE CVT (pointed to by CVTPCVT - offset X'160')

0 (0) PCVATAL - pointer to address list in IEAATA	
4 (4) PCVMCIH - entry point of GTF PFLIH extension routine	
8 (8) PCVADTB - pointer to address table showing nucleus CSECT address	
12 (C) PCVPMUC - pointer to beginning of pageable nucleus CSECTs	
16 (10) PCVSVCT - pointer to format routine for SVCDUMP	
20 (14) PCVABLO - beginning of dump area (see note 14)	

24 (18)	PCVABHI - end of dump area +1 (see note 14)
28 (1C)	PCVPSQA - pointer to pageable system queue area boundary box
32 (20)	PCVSMPG - pointer to storage management queue purge routine
36 (24)	PCVSMFU - pointer to user exit address
40 (28)	PCVVTM1 - pointer to VTAM ABEND module entry point (dummy entry point if VTAM not specified)
44 (2C)	PCVVTM2 - pointer to VTAM ABEND recursion module (dummy entry point if VTAM not specified)
48 (30)	PCVTOX - pointer to timer ENQ routine
52 (34)	PCVAMAP - pointer to AMAP address table
56 (38)	PCVENPT - address of enabled POST entry point V (IEAENPT)
60 (3C)	PCVVTM0 - address of VTAM ABEND entry point V (ISTRAAA0)
64 (40)	PCVSBCB - address of subsystem control block

Notes:

1. The master scheduler resident data area consists of a data area followed by the master common area. The offset of the master common area from the beginning of the master scheduler resident data area is subject to change. Therefore, refer to the master common area by using the address in CVTMSLT, offset X'3C', and refer to the data area of the master scheduler resident data area by using the address in CVTMSER, offset X'94'.

Flag Field	Bit	Mask Name	Meaning
2. CVTFLGS	1... .. .xxx xxxx	CVTDMPLK	OS/VS1 flag byte: SVC dump in progress. Reserved bits.
3. CVTDCB 116 (74)	.1... .. ..1. .... ...1 ........ .1.. .... ..1. .... ..1 x... x...	CVT1SSS CVT2SPS CVT4MS1 CVT4MPS CVT6DAT CVTMVS2	Operating system: PCP. MFT, VS1. MVT, VS2. Model 65 multiprocessing. Dynamic address translation. VS2 MVM. Reserved bits.
4. CVTOPTA 182 (86)	1... .. .1... .. ..1. .... ...1 ........ .1. .... ..1 xx..	CVTCCH CVTAPR CVTDDR CVTNIP CVTASCI CVTXPF	Options supported: Channel check handler. Alternate path retry. Dynamic device reconfiguration. NIP is executing. ASCII tape processing. Extended precision floating point. Reserved bits.
5. CVTOPTB 183 (87)	1... .. .1... .. ..1. .... ...0 1.. .... .1.. .... ..1. .... ..1	CVTPROT CVTCTIMS CVTTOD CVTNLOG CVTAPTHR CVTFP CVTVS1A CVTVS1B	Miscellaneous flags: Storage protection in CPU. Clock comparator and CPU timer present and supported at sysgen. Time-of-day clock supported. SYS1.LOGREC is unavailable for error recording (always set to 0). Device testing complete. Reset to zero after link pack area is ini- tialized. Fetch protection in CPU. 138/148 assist is available for use. 158 assist is available for use.
6. Byte 1 of CVTABEND contains ABEND trace flags with the following meanings:			
	1... .. .1... .. .... .1 ..xx xxx.		Trace is to be started. Trace is to be stopped. Trace is active. Reserved bits.
Bytes 2-4 of CVTABEND contain either the address of list entries in pageable SQA, or the number (hex) of entries traced before wraparound.			
7. CVTGTFST 236 (EC)	xx... .. 11... .. 10... .. 01... .. 00... .. ..1. .... ...1 .......0 1.. .... .1.. .... ..1. .... ..1.... ..x	CVTGTF5 CVTGTFAC CVTGTFSP CVTGTFSR CVTGTFIN CVTSTATE CVTTMODE CVTFORM CVTUSR CVTRNIO	GTF flags: GTF status. GTF is active. GTF is stopping. GTF is starting. GTF is not active. GTF is in control, processing a hook. Trace data to be written to external device (MODE=EXT). MODE=INT. Trace data is to be formatted on ABEND. User-requested trace data to be in- cluded in trace data set. GTF is active and tracing RNIO events. Reserved bit.

- | | | | |
|----------------------------------|--|--|---|
| 8. CVTTCMFG
240 (F0) | 1... ..
.xxx xxxx | CVTTCRDY | TCAM flags:
TCAM is ready to accept users.
Reserved bits. |
| 9. CVTAMFF
DBGFL
264 (108) | 1...
.... .1..
.... ...1
xxxx ...x. | DBGVOCE
DBGMSG
DBGERCCA | CVT Debug Aid Field

VSAM open, close, and end of
volume debug bit.
System issues appropriate error
message.
ESTAE retain CCA.
Reserved bits. |
| DBGARG
265 (109) | 0000 0001

0000 0010

0000 0011

All other values
(X'04' - X'FF') | | Exercise options upon termination of
all requests.
Exercise options only when the
catalog return code is nonzero.
Exercise options only when the
catalog return code is not a normal
return code-(0, 8, 36, 40, 44, 76,
and 140, and reason codes 40, 188,
and 240 are considered normal).
Exercise options only when the
catalog return code equals the value
stored. |
| DBGINST
266 (10A)-267 (10B) | | | User sets to X'07FE' for Debug Trap
Instruction. |
| 10. CVTAIF1
356 (164) | 11..
..1..
...x xxxx | CVTPFSW
CVTSRSW | Page fault flags:
Only the paging task may be dis-
patched.
Only the paging task may execute
disabled code.
Reserved bits. |
| 11. CVTSYSK
357 (165) | 1...
.... .1..
.... ...1

.... ...1
xxxx | CVTSLKR
CVTSLKQ
CVTSLKP

CVTSLKO | System lock. If not zero, only the
paging task may be dispatched.
Machine check handling in progress.
SQA is full.
Last paging control block (PCB) has
been used.
Routine running disabled has pro-
duced a page fault.
Reserved bits. |
| 12. CVTVOLT1 | is set by the WARN=parameter in the CTRLPROG macro (0 is the
default value). After power warning feature initialization, CVTVOLT1 is
overlaid by CVTVOLM1, which contains the address of the power warning
feature communications area. | | |
| 13. CVTFLGBT
5 (5) | 1...
..1..

..1.
...x xxxx | CVTNPE
CVTVME

CVTBAH | VM flags:
Nonpaging VM environment.
Machine is operating in a VM
environment.
VM/370 VS1 BTAM Autopoll
Handshake is active.
Reserved bits. |
| 14. | The dump area is a reserved block of virtual storage not associated with any
partition. It can be appended to a partition when additional storage is needed
for ABEND dump processing. | | |

Data Control Block (DCB)

Device Interface Segments (size determined by DEVD operand)

Direct Access Storage Devices Interface

0 (0) DCBRELAD - PDS: TTRN of member SYS1.LOGREC: address of parameter table (if CCH specified at SYSGEN)		
4 (4) DCBKEYCN - keyed block overhead constant	5 (5) DCBFDAD - MBBCCHHR of record just processed	
	13 (D) DCBDVTBL - address of device table entry	
16 (10) DCBKEYLE - key length	17 (11) DCBDEVT - device (see note 1)	18 (12) DCBTRBAL - number of bytes remaining on current track 19 (13)

Magnetic Tape

0 (0) Reserved			
11 (8)			
12 (C) DCBBLKCT - block count for each volume			
16 (10) DCBTRTCH - tape recording technique (see note 2)	17 (11) DCBDEVT - device (see note 3)	18 (12) DCBDEN - tape density (see note 4)	19 (13) Reserved

Paper Tape

8 (8) DCBLCTBL - address of translate table			
12 (C) Reserved			

16 (10) DCBCODE - paper tape code (see note 5)	17 (11) DCBDEVT - device X'50'=2671	18 (12) Reserved	19 (13) DCBPTFLG - paper tape flags (see note 6)
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Printer

16 (10) DCBPRTSP - spacing (see note 7)	17 (11) DCBDEVT - device (see note 8)	18 (12) DCBPRTOV - PRTOV mask (see note 9)	19 (13) DCBPRBYT - (see note 9A)
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Card Reader, Card Punch

16 (10) DCBMODE, DCBSTACK - code, stacker (see note 10)	17 (11) DCBDEVT - device (see note 11)	18 (12) Reserved	19 (13) DCBFUNC - 3525 function indicator (see note 12)
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1287, 1288, 3886 Optical Character Readers

0 (0) Reserved	DCBWTOID DCBWTIOA - WTO identification number (MCS), or PCI MICB address (after first READ)		
4 (4) DCBERRCN - address of eight 4-byte counters used for totaling 1285, 1287, and 1288 error conditions			
-----or-----			
4 (4) DCBLNNUM - 3886 document line number	5 (5) DCBLFMAT 3886 line format number	6 (6) DCBORFLG 3886 flags X'80'= end of page	7 (7) Reserved
8 (8) DCBFRID - 3886 format record ID, or DCBDSPLY - address of BSAM DSNLY rtn used for keyboard entry of complete field			
12 (C) DCBRESCN - address of RESCN module, DCBRDLNE - address of RDLNE module, or DCBFRTBA - address of 3886 format record table			
16 (10) DCBORBYT - BSAM/QSAM flags (see note 13)	17 (11) DCBDEVT - device (see note 14)	18 (12) DCBEIB - error flags (see note 15)	19 (13) Reserved

0 (0)			
Before OPEN: DCBSSID - name of stacker select routine After OPEN: DCBWTOID - WTO identification number (MCS), or PCI MICB address (after first READ), or DCBQSMEX - address of user's QSAM exit routine for 3890 followed by: DCBSSAD - address of user stacker select routine, or DCBIMG - address of 3890 user image proc			
8 (8) DCBIMAGE			
DCBMRFG buffer indicator (see note 16)		DCBIMAGA - address of user image address area	
12 (C) DCBHDR - address of 3890 user header data area, or DCBECBLA - address of ECB list			
16 (10) DCBMRFLG flag byte (see note 18)		17 (11) DCBDEVT - device (see note 19)	18 (12) DCBAPPIN situation indicator for appendage
			19 (13) Reserved (see note 20 for 3890)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DCBDEVT 17 (11)	0010 0001	DCBDV311	2311 Disk Storage Drive*.
	0010 0010	DCBDV301	2301 Drum Storage*.
	0010 0011	DCBDV303	2303 Drum Storage*.
	0010 0101	DCBDV321	2321 Data Cell Drive*.
	0010 1000	DCBDV314	2314 Storage Control.
	0010 0110		2305 Fixed Head Storage Model 1.
	0010 0111		2305 Fixed Head Storage Model 2.
	0010 1001	DCBDV330	3330 Disk Storage Model 1 or MSS (Mass Storage System) virtual volume.
	0010 1010	DCBDV340	3340 Direct Access Storage Facility.
	0010 1011		3350 Direct Access Storage.
	0010 1101		3330 Disk Storage Model 11.
*Not supported			
2. DCBTRTCH 16 (10)			Tape recording technique for 7-track tape:
			Code
	0010 0011	DCBMTE	E Even parity.
	0011 1011	DCBMTT	T BCD/EBCDIC translation.
	0001 0011	DCBMTC	C Data conversion.
3. DCBDEVT 17 (11)	0010 1011	DCBMTE	ET Even parity and translation.
	1000 0001	DCBDVMT	Magnetic tape device:
	1000 0011	DCBDVMT3	2400 series.
			3400 series.
4. DCBDEN 18 (12)			Tape density:
			Code 7-track 9-track
	0000 0011	DCBMTDN0	0 200 bpi -
	0100 0011	DCBMTDN1	1 556 bpi -
	1000 0011	DCBMTDN2	2 800 bpi 800 bpi
	1100 0011	DCBMTDN3	3 - 1600 bpi
	1101 0011	DCBMTDN4	4 - 6250 bpi
5. DCBCODE 16 (10)			Paper tape translate table:
			Code
	1000 0000	DCBPTCDN	N No conversion.
	0100 0000	DCBPTCDI	I IBM BCD.
	0010 0000	DCBPTCDF	F Friden.
	0001 0000	DCBPTCDB	B Burroughs.
	0000 1000	DCBPTCDC	C National Cash Register.
	0000 0100	DCBPTCDA	A ASCII (8-track).
	0000 0010	DCBPTCDT	T Teletype.
	.... ..x		Reserved bit.

6. DCBPTFLG 19 (13)	.... 1 1.... .... .1.. .... .1. .... .0.. .... ....1 xxx.	DCBPTIC DCBPTECT DCBPTECR DCBPTUCT DCBPTERR	Paper tape flags: Invalid character in last record read. End-of-record character reached in translation. End-of-record character detected during read. Uppercase translate. Lowercase translate. Error detected on read. Reserved bits.
7. DCBPRTPS 16 (10)	0000 0001 0000 1001 0001 0001 0001 1001 xxx. .xx.	DCBPRSP0 DCBPRSP1 DCBPRSP2 DCBPRSP3	Number indicating normal printer spacing: Code 0 No spacing. 1 Space one line. 2 Space two lines. 3 Space three lines. Reserved bits.
8. DCBDEVT 17 (11)	0100 1000 0100 1010 0100 1001 0100 1110 0100 1011	DCBDVPR1 DCBDVPR2 DCBDVPR3 DCBDVPR5 DCBDVPR4	Device: 1403 Printer and 1404 Printer (continuous form support only). 1443 Printer. 3211 Printer. 3800 Printing Subsystem 3203 Printer
9. DCBPRTOV 18 (12)	0010 0000 0001 0000 xx. .xxxx	DCBPRC9 DCBPRC12	Test for printer overflow mask (PRTOV): Code 9 Test for channel-9 overflow. 12 Test for channel-12 overflow. Reserved bits.
9A. DCBPRBYT 19 (13)	.... .xx xxxx xx..	DCBTRICD	Two-bit ID of the 3800 Printing Subsystem character arrangement table that is active or most recently selected. Reserved bits.
10. DCBMODE, DCBSTACK 16 (10)	1000 0100 0010 0001 0010 0001 xx..	DCBMODEC DCBMODEE DCBMODEO DCBMODER DCBSTCK2 DCBSTCK1	Mode of operation for 1442 Card Read Punch: Code C Column binary mode. E EBCDIC mode. Mode of operation for 3505 Card Reader and 3525 Card Punch with read feature: O Optical mark read mode. R Read column eliminate mode. Stacker selection: 2 Stacker 2. 1 Stacker 1. Reserved bits.
11. DCBDEVT 17 (11)	0100 0001 0100 0010 0100 0011 0100 0100 0100 0101 0100 0110 0100 1100	DCBDVCR0 DCBDVCP0 DCBDVCRP DCBDVCR1 DCBDVCPR DCBDVCR2 DCBDVCP1	Device: 2540 Card Reader. 2540 Card Punch. 1442 Card Read Punch. 2501 Card Reader. 2520 Card Read Punch. 3505 Card Reader. 3525 Card Punch.
12. DCBFUNC 19 (13)	1... .... ..1. .... ..1. .... ..1. 1... .... .1.. .... ..1. .... ...x	DCBFNCB1 DCBFNCBR DCBFNCBP DCBFNCBW DCBFNCBD DCBFNCBX DCBFNCBT	Function indicators for the 3525 Card Punch, as specified by the FUNC parameter: Code T Interpret (punch and print two lines). R Read. P Punch. W Print. D Data protection. X This data is to be printed. This may be coded with PW or RPW to distinguish the data set to be printed from the data set to be punched. T Two-line print support requested. The second print line is located on card line three. Reserved bit.

13. DCBORBYT 16 (10)	1... .. .1... .. ..1. .... ...x xxxx	DCBORSYN DCBOREOF DCBORBFP	Optical reader byte (BSAM/QSAM): SYNAD in control. EOF. Buffers primed (QSAM). Reserved bits.
14. DCBDEV 17 (11)	0101 1010 0101 1011 0101 1100 0101 0111	DCBDVOR5 DCBDVOR7 DCBDVOR8 DCBDVOR9	Device: 1285 Optical Reader. 1287 Optical Reader. 1288 Optical Reader. 3886 Optical Reader.
15. DCBEIB 18 (12)	.1... .. ..1. .... ...1 1...	DCBORNRM DCBORREJ DCBORERR DCBORECK	Error indicator byte: The 1287 or 1288 scanner was unable to locate the reference mark. 1287: A stacker select command was given after the allotted time had elapsed and the document put into the reject pocket. 1288 unformatted: End-of-page. An unrecoverable error has occurred.
	.... .1.. .... .1.	DCBORWLR DCBORHPR	An equipment check resulted in an incomplete read. Wrong-length record. QSA: Operator entered one or more characters from the keyboard.
	.... ...1 x...	DCBORDCK	BSAM: Hopper is empty. A data check has occurred. Reserved bit.
16. DCBMRFG 8 (8)	xx... .. ...x xxxx	DCBMRBCT	Buffer indicator: A binary counter which indicates buffer into which status information is to be posted. Reserved bits.
17. DCBMRIND 12 (C)	xxx. .... ...1 1.. .... .1.. .... .1.	DCBMRDCT DCBMRSCU DCBMRPLO DCBMRPLS DCBMRERP	Indicator and counter byte: Number of documents read after disengage. DCB was altered when SYNAD routine was entered due to an SCU (secondary control unit) error. Pocket light has been turned on. Pocket light 0-6 is being set on.
	.... ...1	DCBMRERS	Error recovery procedure is executing for primary control unit. Error recovery procedure is executing for secondary control unit.
18. DCBMRFLG 16 (10)	1... .. .1... .. ..1. .... ...1 xx..	DCBMRSCC DCBMRDBG DCBMRDRU DCBMRDR DCBMRPCC	Flag byte: First or second secondary control unit command chain is being used. Debugging mode in use. Disengage requested by user. Disengage requested. Counter indicating first, second, or third primary control unit command chain is being used.
	.... .1. .... ...1	DCBMRDWT DCBMRUE	WTO message must be deleted. Unit exception.
19. DCBDEV 17 (11)	0101 1101 0101 1111 0101 0110	DCBDVMR DCBDVORS DCBDVMRS	Device: 1419 Magnetic Character Reader. 1275 Optical Reader/Sorter. 3890 Magnetic Character Reader/ Sorter.
20. (3890 only) 19 (13)	1... .. .... ...1		Image file EOF indicator. Image processing active.

ACCESS METHOD COMMON INTERFACE

16 (10) DCBKEYLE key length	17 (11) DCBDEVT - device X'4F' = terminal, or DCBREL - no. of relative tracks or blocks in data set (BDAM)	18 (12) Reserved
20 (14) DCBBUFNO number of buffers or segment workareas	DCBBUFCB DCBBUFCA - address of buffer pool control block	
24 (18) DCBBUFL - buffer length (0 to 32,767)	26 (1A) DCBDSORG - data set organization (see note 1)	
28 (1C) DCBLNP, DCBQSLM (see note 2)	29 (1D) DCBIOBAA - address of IOB Prefix when chained scheduling or 1419/1275 is used, or DCBODEBA - address of old DEB or	
28 (1C) Reserved	29 (1D) DCBSVCXA - address of exit list of JES Compatibility Interface SVC routines 31 (1F)	

FOUNDATION EXTENSION

32 (20) DCBHIARC, DCBBFTEK, DCBBFALN (see note 3)	DCBEODAD DCBEODA - address of user EOF routine
36 (24) DCBRECFM record format (see note 4)	DCBEXLST DCBEXLSA - address of user's exit list 39 (27)

FOUNDATION: Before OPEN

40 (28) DCBDDNAM - DD statement name		
48 (30) DCBOFLGS - OPEN flags (see note 5)	49 (31) DCBIFLG - IOS flags (see note 6)	50 (32) DCBMACR - type of I/O macro instruction and options (see note 7) 51 (33)

FOUNDATION: After OPEN

<p>40 (28)</p> <p>DCBTIOT - offset to DD entry in TIOT (TIOELNGH)</p>	<p>42 (2A)</p> <p>DCBMACRF - type of I/O macro instruction and options (see note 7)</p>
<p>44 (2C)</p> <p>DCBIFLGS - IOS error flags (see note 6)</p>	<p>DCBDEBAD</p> <p>DCBDEBA - address of DEB</p>
<p>48 (30)</p> <p>DCBOFLGS - OPEN flags (see note 5)</p>	<p>49 (31)</p> <p>DCBREAD/DCBWRITE/DCBGET/DCBPUT - address of READ/WRITE/GET/PUT module</p> <p>51 (33)</p>

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DCBDSORG			
Data set organization to be used:			
Byte 1	1... ..	DCBDSGIS	IS Indexed sequential.
26 (1A)	.1.. ..	DCBDSGPS	PS Physical sequential.
	..1. ..	DCBDSGDA	DA Direct.
	...1 ..	DCBDSGCX	CX BTAM or QTAM line group.
	.... .1.	DCBDSGPO	PO Partitioned.
	.... ..1	DCBDSGU	U Unmovable - location dependent information.
Byte 2	.... xx..		Reserved bits.
27 (1B)	1... ..	DCBDSGGS	GS Graphics.
	.1.. ..	DCBDSGTX	TX TCAM line group.
	..1. ..	DCBDSGTQ	TQ TCAM message queue.
	.... 1...	DCBACBM	ACB.
	.... .1..	DCBDSGTR	TR TCAM 3705.
	....x ..xx		Reserved bits.
2. DCBLNP - 3525 line position counter			
DCBQSLM			
28 (1C)	1... ..	DCB1DVDS	QSAM locate interface for updating spanned records: Only one device allocated to this data set.
	.1.. ..	DCBUPDCM	Update complete, free old DEB.
	..10 ..	DCBUPDT	Update to take place.
	..11 ..	DCBNUPD	No update to take place.
	..01 ..	DCBSVDEB	Old DEB address must be saved.
	.... xxxx		Reserved bits.
3. DCBBFALN			
DCBBFTEK			
DCBHIARC			
32 (20)	x... .x..		Hierarchy support (not supported).
	.110 ...	DCBBFTA	Logical record interface for QSAM locate.
	.010 ...	DCBBFTR	Track overflow (BSAM create BDAM processing of unblocked spanned records), or record offset processing for unblocked spanned records with keys (BSAM input processing).
	.100 ...	DCBBFTS	Simple buffering.
	.001 ...	DCBBFTE	Exchange buffering.
	.... .10	DCBBFAD	Doubleword boundary buffer alignment.
	.... .01	DCBBFAF1	Fullword buffer alignment coded in DCB.
	.... .11	DCBBFAF2	Fullword buffer alignment coded in DD statement.
	.... x...		Reserved bit.

4. DCBRECFCM
36 (24)

10..	DCBRECFC
01..	DCBRECVC
11..	DCBRECUC
001.	DCBRECDC
..1.	DCBRECTO
...1	DCBRECBCR
.... 1...	DCBRECSCB
.... ..10.	DCBRECCA
.... ..01.	DCBRECCM
.... ..00.	DCBRECC
.... ...1	DCBRECKL

Record format:

<u>Code</u>	
F	Fixed record length.
V	Variable record length.
U	Undefined record length.
D	ASCII variable length record.
T	Track overflow.
B	Blocked records.
S	Fixed length record format: standard blocks.
	Variable length record format: spanned records.
CA	ANSI control character.
M	Machine control character.
	No control character.
KEYLEN specified in DCB macro.	

5. DCBOFLGS
48 (30)

1...	DCBOFLWR
0...	
..1.	DCBOFLRB
..1.	DCBOFEOV
...1	DCBOFOPN
.... 1...	DCBOFPPC
.... ..1.	DCBOFTM
.... ..0.	DCBOFUFX
.... ..1.	
.... ...1	DCBOFIOF

Flags used by the OPEN routine:
Last I/O operation was a WRITE, or data set being opened for input or output (BDAM).
Last I/O operation was a READ or POINT, or DISP=MOD was specified in the DD statement.
Last I/O operation was in read-backward mode.
Close routine for concatenation of data sets.
OPEN successfully completed.
Problem program concatenation.
Tape mark or end of file read.
User exit taken.
Return from user exit.
DCB to be processed.

6. DCBIFLG(S)
49 (31) or
44 (2C)

00..	DCBIFNEP
01..	DCBEX
11..	DCBIFPEC
..10	DCBIFC9
..01	DCBIFC12
.... 00..	DCBIFER
.... 11..	DCBIFNE3
.... 01..	DCBIFNE1
.... 10..	DCBIFNE2
.... ..xx	

Used by I/O supervisor in communicating error conditions and in determining corrective procedures:
Not in error procedure.
Error correction or IOS page fix in progress.
Permanent error condition.
Channel-9 printer carriage tape punch sensed.
Channel-12 printer carriage tape punch sensed.
Always use I/O supervisor error routine.
Never use I/O supervisor error routine.
Never use I/O supervisor error routine, or test IOS mask for error procedure (BTAM).
Never use I/O supervisor error routine.
Reserved bits.

7. DCBMACR(F)
Byte 1
50 (32) or
42 (2A)

1...	DCBMRECP
..1.	DCBMRFE
..1.	DCBMRAPG
...1	DCBMRCI
.... ..1.	DCBMRABC
.... ..1.	DCBPGFXA
.... x..x	
.... 1...	DCBMR5WD
.... ..1.	DCBMR4WD
.... ..1.	DCBMR3WD
.... ...1	DCBMR1WD
xxxx	

EXCP access method

<u>Code</u>	
	Execute channel program (EXCP).
	Foundation extension present. Appendages required with EXCP.
	Common interface present. User's program maintains accurate block count.
	Page fix appendage specified.
	Reserved bits.
	Five-word device interface.
	Four-word device interface.
	Three-word device interface.
	One-word device interface.
	Reserved bits.

Byte 2	1... ..	DCBMRSTL	<u>QISAM</u>	
	.1... ..	DCBMRPUT	S	SETL.
	.0... ..		P	PUT or PUTX.
	...1... ..	DCBMRMVP		Always zero.
	...1... ..	DCBMRLCP	M	Move mode of PUT.
	...1... ..	DCBMRLUIP	L	Locate mode of PUT.
	...1... ..	DCBMRSTK	U	Update in place (PUTX).
	...1... ..	DCBMRSTI	K	SETL by key.
Byte 1	00... ..		I	SETL by ID.
	...1... ..	DCBMRRD	<u>BDAM</u>	
	...1... ..	DCBMRWDK	R	Always zero.
	...1... ..	DCBMRDDI	K	READ.
	...1... ..	DCBMRDBF	I	Key segment with READ.
	...1... ..		S	ID argument with READ.
	...1... ..	DCBMRDX	X	System provides area for READ (dynamic buffering).
	...1... ..	DCBMRCK	C	Read exclusive.
Byte 2	00... ..			CHECK macro instruction.
	...1... ..	DCBMRWRT	<u>BDAM</u>	
	...1... ..	DCBMRWRK	W	Always zero.
	...1... ..	DCBMRIDW	K	WRITE.
	...1... ..	DCBMRRAWR	I	Key segment with WRITE.
	...1... ..	DCBMRSWA	A	ID argument with WRITE.
	...1... ..		A	Add type of WRITE.
	...1... ..			A user-provided segment work area for a format VS data set is present.
Byte 1	... .x..			Reserved bit.
	.1... ..	DCBMRGET	<u>TCAM - Input</u>	
	x.xx xxxx		G	GET.
Byte 2				Reserved bits.
	.1... ..	DCBMRPUT	<u>TCAM - Output</u>	
	x.xx xxxx		P	PUT.
				Reserved bits.

EXCP

52 (34) DCBOPCD option codes (see note 1)	53 (35) reserved	
60 (3C) DCBEOEA - ID of end-of-extent appendage	62 (3E) DCBPCIA - ID of program-con- trolled-interruption appendage	
64 (40) DCBSIOA - ID of start I/O appendage	66 (42) DCBCENDA - ID of channel-end appendage	
68 (44) DCBXENDA - ID of abnormal- end appendage	70 (46) reserved	71 (47)

QSAM, BSAM, BPAM, Common Interface

52 (34) DCBOPTCD option codes (see note 2)	53 (35) DCBGERRA/DCBPERRA/DCBCHCKA - address of GET/PUT/CHECK module		
56 (38) DCBIOBL - IOB length in double- words	DCBSYNAD DCBSYNA - address of user SYNAD routine		
60 (3C) DCBCIND1 condition indicators (see note 3)	61 (3D) DCBCIND2 condition indicators (see note 4)	62 (3E) DCBBLKSI - maximum block size	
64 (40) DCBWCPO-write channel program offset	65 (41) DCBWCPL - length of write channel program	66 (42) DCBOFFSR - read CCW offset	67 (43) DCBOFFSW- write CCW offset
68 (44) DCBIOBA - normal scheduling: address of IOB Prefix chained scheduling: address of ICB 1419/1275: address of MICB or			
68 (44) reserved	DCBCICB DCBCICBA - pointer to JES Compatibility Interface Control Block (spooled data sets [SYSOUT, DATA, *] only or if DCBCIND1, offset X'3C', equals X'08') 71 (47)		

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DCBOPTCD 52 (34)	.... .1..	DCBOPTZ	Option codes: Code Z For magnetic tape devices, use reduced error recovery procedure.
	xxxx x.xx		Reserved bits.
2. DCBOPTCD 52 (34)	1...	DCBOPTW	Option codes: W Write validity check (DASD).
	.1..	DCBOPTU	U Allow a data check caused by an invalid character (1403 Printer with UCS).
			B Treat EOF and EOY labels as EOY labels (permits SL or AL tapes to be read out of order).
	..1.	DCBOPTC	C Chained scheduling using the program controlled interruption.
	...1	DCBOPTH	H Optical Reader: Hopper empty exit (BSAM, BPAM), or
		DCBOPTO	O Online correction (QSAM).
	.... 1...	DCBOPTQ	Q Translation to or from ASCII.
	.... .1..	DCBOPTZ	Z Tape: Use reduced error recovery procedure. DASD: Use search direct instead of search previous.
	.... ..1.	DCBOPTT	T User totaling (BSAM only).
	.... ...1	DCBOPTJ	J 3800 Printing Subsystem table reference character present.

3. DCBCIND1 60 (3C)	1... ..	DCBCNTOV	Condition indicators: Track overflow in use (DASD). Data set open but no data written (2540 - QSAM).
	.1..	DCBCNSRD	Search direct.
	...1.	DCBCNEVB	EOV - used by EOB routines.
	...1	DCBCNEVA	EOV - used by channel-end ap- pendage routines.
	.... 1..	DCBCINCI	DCB is being processed by JES Compatibility Interface routines.
	.... .1..	DCBCNBRM	Blocked record indicator set by CLOSE (VSAM); will be turned off by OPEN.
			<u>Note:</u> This bit is required to cor- rectly handle the closing of a DCB for a unit record device and then re- opening the DCB for another device type. If you request blocked records, the OPEN executors turn off the blocked records bit in DCBRECFLM. When the unit record DCB is closed, the blocked record switch is not re- stored to its original status. If you later open the same DCB for a non- unit record device, the blocked rec- ord bit will not be on, and your job will be abnormally terminated because its BLKSIZE is larger than its LRECL.
	.... ...1	DCBCNEXB	Exchange buffering supported.
	.... ..x.		Reserved bits.
4. DCBCIND2 61 (3D)	1... ..	DCBCNSTO	Condition indicators: <u>Partitioned data set:</u> STOW has been performed.
			<u>Sequential data set:</u> Update (BSAM, BPAM).
	.1..	DCBCNWRO	<u>Direct organization data set:</u> Last I/O was a write record zero.
			<u>Sequential data set:</u> UPDATE EOF is indicated (BSAM, BPAM).
	..1.	DCBCNCLO	PUT entered from CLOSE while in update mode (QSAM only).
	...1	DCBCNIOE	Permanent I/O error.
	.... 1..	DCBCNBFP	OPEN acquired buffer pool.
	.... .1..	DCBCNCHS	Chained scheduling supported.
	.... .1.	DCBCNFEO	FEOV.
	.... ...1	DCBCNQSM	This is a QSAM DCB.

BSAM, BPAM Interface

72 (48) DCBNCP - no. of channel programs	DCBEOBR DCBEOBRA - address of READ end-of-block module
76 (4C) DCBEOBW - address of end-of-block module for WRITE, or address of segment work area control block	
80 (50) DCBDIRECT or DCBUSASI/ DCBBUFOF (see note 1)	82 (52) DCBLRECL - logical record length
84 (54) DCBCNTRL/DCBNOTE/DCBPOINT - address of CNTRL/NOTE/POINT module	87 (57)

QSAM Interface

72 (48) DCBLCCW - address of last CCW in list (exchange buffering), or DCBEOBAD - address of last byte of current buffer (simple buffering)		
76 (4C) DCBRECBT flag byte (see note 2)	77 (4D) DCBCCCCW - address of current or next CCW (exchange buffering), or DCBRECAD - address of current or next logical record	
80 (50) DCBQSWs/ DCBUSASI (see note 3)	81 (51) DCBDIRCQ directory block length (0 - 254)	82 (52) DCBLRECL - logical record length
84 (54) DCBEROPT error options (see note 4)	85 (55) DCBCNTRA - address of CNTRL module	
88 (58) reserved		90 (5A) DCBPREFL - (see note 5)
92 (5C) DCBEOB - address of end-of-block module		
95 (5F)		

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. DCBDIRCT	is a 2-byte field containing the directory count, ranging from 0 to 255.		
DCBUSASI 80 (50)	.1..	DCBBLBP	Flag byte for ASCII tapes: Block prefix is a 4-byte field containing block length in unpacked decimal (BUFOFF=L).
	..xx x...	DCBQADFS	Sequence checking with multiple function support for 3525 (BSAM only).
	x... .xxx		Reserved bits.
2. DCBRECBT 76 (4C)	1000	DCBRCTRU	Flag byte: TRUNC macro has been issued.
	0100	DCBRCFG T	First GET after OPEN (LOCATE mode).
	1111	DCBRCREL	RELSE macro has been issued.
	.... xxxx		Reserved bits.
3. DCBQSW S 80 (50)	.... .1..	DCBOPEN	QSAM flag byte: DCB successfully opened for parallel input processing.
	xxxx x.xx		Reserved bits.
DCBUSASI 80 (50)	.1..	DCBBLBP	ASCII tape flag byte: Block prefix is a 4-byte field containing block length in unpacked decimal (BUFOFF=L).
	..xx x...	DCBQADFS	Sequence checking with multiple function support for 3525.
	.... ...1	DCBQSTRU	TRUNC entry point entered.
	x... .xx.		Reserved bits.
4. DCBEROPT 84 (54)	100.	DCBERACC	Error option flags: <u>Code</u> ACC Accept permanent error.
	010.	DCBERSKP	SKP Skip permanent error.
	001.	DCBERABE	ABE Abnormal end of task.
	...x xxxx		Reserved bits.
5. DCBPRECL 90 (5A)	Format F records: block length		
	Format U records: maximum block length		
	Format V records, unspanned record format: maximum block length		
	Format V records, spanned record format:		
	PUT, other than data mode - maximum block length		
	PUT, data mode - data length		
	GET - segment control code of previous segment		
	for variable spanned records		

ISAM Interface

52 (34) DCBOPTCD option codes (see note 1)	53 (35) DCBMAC - ISAM extension of DCBMACRF (see note 2)	54 (36) DCBNTM - master index size (max. = 99)	55 (37) DCBCYLOF - no. overflow tracks on each prime data cylinder
56 (38) DCBSYNAD - address of user SYNAD routine			
60 (3C) DCBRKP - relative position of first byte of key within logical record		62 (3E) DCBBLKSI - block size	
64 (40) DCBMSWA - address of work area used when adding new records to data set, or DCBLPDT - last prime data track on last prime data cylinder for resume load (8-byte field in form MBBCCCHR)			
68 (44) DCBSMSI - number of bytes in area reserved for highest level index		70 (46) DCBSMSW - number of bytes in work area used when adding new records to data set	
72 (48) DCBNCP - no. of copies of READ - WRITE channel programs	DCBMSHI DCBMSHIA - address of real storage area to hold highest level index		
76 (4C) DCBSETL - address of SETL module (QISAM), or address of CHECK module (BISAM)			
80 (50) DCBEXCD1 condition flags (see note 3)	81 (51) DCBEXCD2 condition flags (see note 4)	82 (52) DCBLRECL - logical record length (Format F); max. logical record length or length spec. by user (Format V)	
84 (54) DCBESETL - address of ESETL routine in GET module			
88 (58) DCBLRAN - address of READ-K, WRITE-K, or read exclusive module			
92 (5C) DCBLWKN - address of WRITE-KN module			
96 (60) DCBRELSA - work area for temporary storage of register contents			

100 (64) DCBPUTX - work area for temporary storage of register contents			
104 (68) DCBRELEX - address of read exclusive module			
108 (6C) DCBFREED - address of dynamic buffering module			
112 (70) DCBHIRT1 - no. of index entries that fit on a prime data trk	113 (71) DCBFTMI2 - DASD address of second-level master index (MBBCCHH)		
120 (78) DCBLEMI2 - DASD address of last active entry in second-level master index (CCHHR)			
125 (7D) DCBFTMI3 - DASD address of third-level master index (MBBCCHH)			
132 (84) DCBLEMI3 - DASD address of last active entry in third-level master index (CCHHR)			
	137 (89) DCBNLEV - no. of levels of index	138 (8A) DCBFIRSH - HHR of first prime data record (for Format V, R=X'01')	
continued	141 (8D) DCBHMASK X'FF'=device not a 2301	142 (8E) DCBLDT - HH of last prime data track	
144 (90) DCBHRCM - max. R for indexes	145 (91) DCBHIRPD - max. R for prime data track	146 (92) DCBHIROV - max. R for overflow data tracks (Format F only)	147 (93) DCBHIRSH - last R on shared track (Format F only)
148 (94) DCBTDC - number of records tagged for deletion		150 (96) DCBNCRHI - number of bytes needed for highest level index	

152 (98) DCBRORG3 - number of READ or WRITE accesses to overflow records, other than the first	
156 (9C) DCBNREC - number of logical records in prime data area	
160 (A0) DCBST - status indicators (see note 5)	161 (A1) DCBFTCI - DASD address of cylinder index (MBBCCHH)
168 (A8) DCBHIOV - max. R for ind. overflow data tracks (Format F only)	
169 (A9) DCBFTMI1 - DASD address of first-level master index (MBBCCHH)	
176 (B0) DCBNTHI - size of highest level index	177 (B1) DCBFTHI - DASD address of highest level index (MBBCCHH)
184 (B8) DCBLPDA - DASD address of last prime data record in prime data area (MBBCCHHR)	
192 (C0) DCBLETI - DASD address of last active normal entry of track index on last active cylinder (CCHHR)	
197 (C5) DCBOVDEV - device for overflow (see note 6)	198 (C6) DCBNBOV - no. of bytes on current track in overflow area (Format V only)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DCBOPTCD 52 (34)	1... .. .1... .. ...1... .. ...1... .. ....1... ....1... ....1... ....x..	DCBOPTW DCBOPTUF DCBOPTM DCBOPTI DCBOPTY DCBOPTL DCBOPTR	Option codes: Code W Write validity check. U Full-track index WRITE. M Master indexes. I Independent overflow area. Y Cylinder overflow area. L Delete option. R Reorganization criteria. Reserved bit.
2. DCBMAC 53 (35)	....1... ....1... ....1... ....1... xxxx ..	DCBMACUR DCBMACUW DCBMACAW DCBMACRE	Extension of the DCBMACRF field for ISAM: U Update for READ. U Update type of WRITE. A Add type of WRITE. R READ exclusive. Reserved bits.
3. DCBEXCD1 80 (50)	1... .. .1... .. ...1... .. ...1... .. ....1... ....1... ....1... ....1...	DCBEXNKY DCBEXIDA DCBEXNSP DCBEXINV DCBEXIER DCBEXOER DCBEXBLI DCBEXBLU	Exceptional conditions: Lower key limit not found. Invalid device address for lower limit. Space not found. Invalid request. Uncorrectable input error. Uncorrectable output error. Block could not be reached (input). Block could not be reached (update).
4. DCBEXCD2 81 (51)	1... .. .1... .. ...1... .. ...1... .. ....1... ....1... ....xxx	DCBEXSEQ DCBEXDUP DCBEXCLD DCBEXOFL DCBEXLTH DCBEXRDE	Exceptional conditions: Sequence check. Duplicate record. DCB closed when error was detected. Overflow record. PUT: length field of record larger than length indicated in DCBLRECL. READ exclusive. Reserved bits.
5. DCBST 160 (A0)	1... .. .1... .. ...1... .. ...1... .. ....1... ....1... ....1... ....x..	DCBSTSSM DCBSTKSQ DCBSTL0D DCBSTNCY DCBSTNMC DCBSTLBF DCBSTLTF	Status indicators: Single schedule mode. Key sequence checking is to be performed. Loading has been completed. Set on by CLOSE routine, and set to 0 by the first execution of the PUT routine. The extension of the data set begins on a new cylinder. First macro instruction not yet received. Last block full. Last track full. Reserved bit.
6. DCBOVDEV 197 (C5)	0000 0001 0000 0010 0000 0011 0000 0100 0000 0101 0000 1000 0000 1011	DCBDVI11 DCBDVI01 DCBDVI03 DCBDVI02 DCBDVI21 DCBDVI14	Device for independent overflow: 2311 Disk Drive*. 2301 Parallel Drum*. 2303 Serial Drum*. 2302 Disk Storage*. 2321 Data Cell Drive*. 2314 Disk Storage Facility. 3350 Direct Access Storage.

* Not supported by OS/VS1

200 (C8) DCBLECI - DASD address of last active entry in cylinder index (CCHHR)		
	205 (CD) reserved	206 (CE) DCBRORG2 - no. of tracks (whole or partial) left in overflow area
208 (D0) DCBLEMI1 - DASD address of last active entry in first-level master index (CCHHR)		
	213 (D5) reserved	214 (D6) DCBNOREC - no. of logical records in overflow area
216 (D8) DCBLIOV - DASD address of last record in independent overflow area (MBBCCHHR)		
224 (E0) DCBRORG1 - number of cylinder overflow areas that are full	226 (E2) reserved	
228 (E4) DCBWKPT1 - address of work area or channel program		
232 (E8) DCBWKPT2 - address of work area or channel program		
236 (EC) DCBWKPT3 - address of work area or channel program		
240 (F0) DCBWKPT4 - address of work area or channel program		
244 (F4) DCBWKPT5 - address of work area or channel program		
248 (F8) DCBWKPT6 - address of work area or channel program		

251 (FB)

BDAM Interface

52 (34) DCBOPTCD option codes (see note 1)	DCBCHECK DCBCHCKA - address of CHECK module
56 (38) DCBSYNAD - address of SYNAD routine	
60 (3C) reserved	62 (3E) DCBBLKSI - maximum block size
64 (40) DCBIOBSQ - address of first IOB on unscheduled queue	
68 (44) DCBSQND - address of last IOB on unscheduled queue	
72 (48) DCBIOBUQ - address of first IOB on unposted queue	
76 (4C) DCBUQND - address of last IOB on unposted queue	
80 (50) reserved	81 (51) DCBLIMCT - number of tracks or relative blocks to be searched for extended search option
84 (54) DCBXARG DCBXCNT - no. of entries in read exclusive list	DCBXARGA - address of read exclusive list
88 (58) DCBDRDX DCBMVXNO - no. of extents in multi-volume data set	DCBDRDXA - address of read exclusive module
92 (5C) DCBDFOR - address of a format module	
96 (60) DCBDFBK - address of a feedback module	

100 (64)

DCBDYNB - address of dynamic buffering module, or
address of segment work area control block

103 (67)

Note 1

Flag Field	Bit	Mask Name	Code	Meaning
DCBOPTCD 52 (34)	1... ..	DCBOPTW	W	Option codes:
	.1... ..	DCBOPTTO		Write validity check.
	..1... ..	DCBOPTTE	E	Track overflow.
	...1... ..	DCBOPTF	F	Extended search.
	....1... ..	DCBOPTA	A	Feedback.
	.....1... ..	DCBOPTDB		Actual addressing.
	.....1... ..	DCBOPTRE		Dynamic buffering.
	.....1... ..	DCBOPTRB	R	Read exclusive.
	.....1... ..			Relative block addressing.

BTAM

WTIA Interface

16 (10) DCBBQFLG WTIA flag byte (see note 1)	17 (11) DCBWTEOM EOM character	18 (12) DCBWTEOT EOT character	19 (13) DCBWTPAD - no. of padding characters for motor-on delay
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Common Interface

20 (14) DCBBUFNO - no. of buffers obtained by OPEN	DCBBUFCB DCBBUFCA - address of buffer pool control block
24 (18) DCBBUFL - buffer length	26 (1A) DCBDSORG - data set organization first byte = X'10' means CX TP line group
28 (1C) DCBDEVTP - index to device entry in device I/O directory	DCBIOBAD DCBIOBAA - base for addressing IOBs (address of first IOB minus length of an IOB)
	31 (1F)

Foundation Extension

32 (20) DCBBFTEK X'08' = dynamic buffering	33 (21) DCBERROP error recovery procedures (see note 2)	34 (22) DCBBUFCT - max. no. of read buffers	35 (23) reserved
36 (24) DCBEIOBX size of IOB	DCBEXLST DCBEXLSA - address of user exit list		
			39 (27)

Foundation Before OPEN

40 (28) DCBDDNAM - name from DD statement		
48 (30) DCBOFLGS OPEN flags (see note 3)	49 (31) DCBIFLG IOS error flags (see note 4)	50 (32) DCBMACR - type of I/O macro instruction and options (see note 5) 51 (33)

Foundation After OPEN

40 (28) DCBTIOT - offset to DD entry in TIOT (TIOELNGH)		42 (2A) DCBMACRF - type of I/O macro instruction and options (see note 5)
44 (2C) DCBIFLGS IOS error flags (see note 4)	DCBDEBAD DCBDEBA - address of associated DEB 47 (2F)	

BTAM Interface

48 (30) DCBREAD/DCBWRITE - address of READ/WRITE module		
52 (34) DCBRDYI READYQ indicators (see note 8)	53 (35) DCBLERB - address of line error block, or DCBRDYQ - address of user/BTAM routine to process local 3270 device ready interrupts	55 (37)

BSC Interface: Before OPEN

56 (38) reserved	57 (39) DCBXCOCODE - X'40' =PTOP flag	58 (3A) reserved
60 (3C) DCBIRRAD - address of interface resolution routine (if PTOPI specified in sysgen procedure) 63 (3F)		

BSC Interface: After OPEN

56 (38) DCBXMODE BSC transmission mode (see note 6)	57 (39) DCBXCDE - con- trol station flag transmission (see note 7)	58 (3A) DCBBSRSV DLE control character	59 (3B) DCBBSWBT reserved
60 (3C) DCBBSTX DLE control character	61 (3D) DCBBSSTX STX control character	62 (3E) DCBBSTEX DLE control character	63 (3F) DCBBSETX ETS control character
64 (40) DCBBSAK0 - ACK - 0 control character		66 (42) DCBBSAK1 - ACK - 1 control character	

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DCBBQFLG 16 (10)	.1.. .... ..1. x..x xxxx		WTTA flag byte: WRU feature to be used. IAM feature to be used. Reserved bits.
2. DCBERROP 33 (21)	...1 1... .... .1.. .... ..1. .... ...1.... ...0 xxx.	DCBERPT DCBERPC DCBERPW DCBERPR DCBERPN	Error recovery procedure: <u>Code</u> T Online test facilities to be used. C Threshold and cumulative error counts to be maintained. W Text-write errors to be re- tried. R Text-read errors to be retried. N No error recovery procedures to be followed. E Basic error recovery proce- dures to be followed. Reserved bits.
3. DCBOFLG 48 (30)	...1 ........ ..0. .... ..1. xxx. xx.x	DCBOFOPN DCBOFEUX	Flags used by OPEN: OPEN has been successfully com- pleted. Set to 0 by I/O support function when it takes a user exit, in order to inhibit other I/O support func- tions from processing this particular DCB. Set to 1 on return from the user exit to the I/O support function that took the exit. Reserved bits.
4. DCBIFLG 49 (31)	00.. 01.. 11.. .... ..10 ......01 00.. 01.. 11.. .... ..xx	DCBIFNEP DCBEX DCBIFPEC DCBIFC9 DCBIFC12 DCBIFER DCBIFTIM DCBIFNE3	I/O supervisor error flags: Not in error procedure. Error correction in process. Permanent error condition. Channel-9 printer carriage tape punch sensed. Channel-12 printer carriage tape punch sensed. Always use I/O supervisor error routine. Test IOS mask for error procedure. Never use I/O supervisor error routine. Reserved bits.

5. DCBMACR(F)
 Byte 1 ..1. DCBMRRD Macro instruction reference:
 50 (32) or xx.x xxxx READ.
 42 (4A) Reserved bits.
 Byte 2 ..1. DCBMRWRT WRITE.
 51 (33) or xx.x xxxx Reserved bits.
 43 (2B)
6. DCBXMODE
 56 (38)
 ..1.. DCBXMIBC Mode of transmission for binary
 ..1. DCBXMDA1 synchronous communication (BSC):
 Intermediate block checking is to
 be performed.
 1... DCBXMDA2 Transmission is through a 2701 Data
 Adapter Unit Dual Communication
 Interface B.
 x..x .xxx Transmission is in code B for a 2701
 Data Adapter Unit Dual Code Feature.
 Reserved bits.
7. DCBXCODE
 57 (39)
 1... DCBXCCSF BSC control station flag, transmis-
 0... sion code:
 ..1. DCBXCPTP This is the remote station.
 This is the control station.
 If PTOF is specified in the SYSGEN
 procedure, schedule an asynchronous
 exit to the interface resolution routine.
 ..1. 1... DCBXCTR1 6-bit Transcode is being used.
 ...1 .1.. DCBXCAS1 ASCII transmission code is being used.
 00.. DCBXCCEB EBCDIC transmission code is being used.
 xx Reserved bits.
8. DCBRDYI
 52 (34)
 1. READYQ indicators:
 Address in following three bytes is
 for READYQ, not LERB.
 1 READYQ was specified but address
 was 0, so BTAM READYQ used.
 xxxx xx.. Reserved bits.

68 (44) DCBBSENQ ENQ control character	69 (45) DCBBSNAK NAK control character	70 (46) DCBBSETB ETB control character	71 (47) DCBBSdle DLE control character
72 (48) DCBBSEOT EOT control character	73 (49) DCBBSSYN - SYN, SYN, SYN control characters		
76 (4C) DCBBSONL - SOH% control character		78 (4E) DCBBSSAK - WACK control character	
80 (50) DCBBSRVI - DLE@ control character		82 (52) reserved	

99 (63)

GAM
Graphic Device Interface

0 (0) reserved			11 (B)		
12 (C) DCBBRSA - buffer restart address		14 (E) DCBGTYPE basic/express (see note 1)		15 (F) reserved	
16 (10) DCBBFRST - buffer start address (after OPEN)		18 (12) DCBBFRSZ - buffer size (after OPEN)			
20 (14) reserved					
				26 (1A) DCBDSORG - data set organiza- tion first byte = zeros second byte = X'80' for GS	
28 (1C) DCBIOBAD - address of first IOB (after OPEN)					
31 (1F)					

Foundation Extension

32 (20) DCBGNCPL - no. of I/O instructions be- fore WAIT issued	DCBPOLST	DCBPOLSA - address of DCB list for polling
36 (24) reserved	DCBEXLST	DCBEXLSA - address of user's list

39 (27)

Foundation: Before OPEN

40 (28)	DCBDDNAM - name from DD statement	
48 (30) DCBOFLG OPEN flags (see note 2)	49 (31) DCBIFLG IOS flags	50 (32) DCBMACR - type of macro in- struction and options (see note 3) 51 (33)

Foundation: After OPEN

40 (28)	DCBTIOT - offset to DD entry in TIOT (TIOELNGTH)	42 (2A) DCBMACRF - type of macro in- struction and options (see note 3)
44 (2C) DCBIFLGS IOS flags	DCBDEBAD	DCBDEBA - address of associated DEB
48 (30) DCBOFLGS OPEN flags (see note 2)	DCBGIOCR	DCBGIOCA - address of graphics I/O control routine

51 (33)

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. DCBGTYPE 14 (E)	0000 0000 0000 0001	DCBGTEXP DCBGTBAS	Type of buffer management and attention handling: Express. Basic.
2. DCBOFLG(S) 48 (30)	1... .. 0... .. ..1. .... ...1 1... 1.. .... .1.. 0. 1 ...x... ..	DCBOFGRW DCBOFEOV DCBOFOPN DCBOFPPC DCBOFTM DCBOFUEX DCBOFIOF	OPEN flags: Last I/O operation was a GWRITE. Last I/O operation was a GREAD. Set by EOVS when it calls the close routine for concatenation of data sets. An OPEN has been successfully completed. Set by a problem program to indicate a concatenation of unlike attributes. Tape mark has been read. Set on return from the user exit to the I/O support function that took the exit. Set by an I/O support function when that function takes a user exit, in order to inhibit other I/O support functions from processing this particular DCB. Set by an I/O support function if the DCB is to be processed by that function. Reserved bit.
3. DCBMACR(F)			Major macro instructions and their associated options:
Byte 1 42 (2A)	0010 0010	DCBMRRD DCBMRCRL	Read operation to be performed. Control operation to be performed with the read operation.
Byte 2 43 (2B)	0010 0010	DCBMRWRT DCBMRCTL	Write operation to be performed. Control operation to be performed with the write operation.



Data Extent Block (DEB)

(Pointed to by TCDBEB [TCB + 8] and DCBDEBAD [DCB + X'2D']; mapped by IEZDEB LIST = YES.)

The DEB contains an extension of information in the DCB. Each DEB is associated with a DCB, and the two point to each other. The DEB contains information concerning the physical characteristics of the data set, along with other information used by VS1.

Appendage Vector Table

-36 (-24) DEPEOEAB - no. of 2K pages to be fixed for EOEAB	DEBEOEA DEBEOEAD - address of end-of-extent appendage
-32 (-20) DEBSIOAB - flag byte (see note 1)	DEBSIOA DEBSIOAD - address of start I/O appendage
-28 (-1C) DEBPCIA DEBPCIA - no. of 2K pages to be fixed for PCI appendage	DEBPCIA DEBPCIA - address of program-controlled-interruption appendage
-24 (-18) DEBCEAB - no. of 2K pages to be fixed for channel end appendage	DEBCEA DEBCEAD - address of channel-end appendage
-20 (-14) DEBXCEAB - no. of 2K pages to be fixed for abnormal-end appendage	DEBXCEA DEBXCEAD - address of abnormal-end appendage
-17 (-11)	

DEB Prefix

-16 (-10) DEBWKARA - I/O support work area	-15 (-F) DEBDSCBA - DSCB address (BBCCHHR) used by I/O support
-8 (-8) DEBDCBMK - DCB modification mask used by I/O support	
-4 (-4) DEBLNGTH - length of DEB in doublewords	-3 (-3) DEBAMTYP - access method type (see note 2)
-2 (-2) DEBTBLOF - offset in DEB table to entry for this DEB	
-1 (-1)	

Basic Section

0 (0) DEBTCBAD DEBNMSUB - no. of subroutines loaded by OPEN executor routines		DEBTCBB - address of TCB owning this DEB	
4 (4) DEBDEBAD DEBAMLNG - no. of bytes (BDAM words) in access method section		DEBDEBB - address of next DEB for the same task	
8 (8) DEBIRBAD DEBOFLGS - data set status flags (see note 3)		DEBIRBB - IRB address for appendage asynchronous exits	
12 (C) DEBOPATB - type of I/O flags (see note 4)	13 (D) DEBQSCNT - PURGE quiesce count	14 (E) DEBFLGS1 - flag byte (see note 5)	15 (F) DEBRSV05 - reserved
16 (10) DEBUSRPG DEBNMEXT - no. of extents specified in DSCBs		DEBUSRPB - address of first IOB in user purge chain	
20 (14) DEBECBAD DEBPRIOR - priority of task owning DEB		DEBECBB - address of parameter list used for finding purge ECB	
24 (18) DEBDCBAD DEBPROTG, DEBDEBID - task protect key, ID (see note 6)		DEBDCBB - address of DCB associated with this DEB	
28 (1C) DEBAPPAD DEBEXSCL - extent scale		DEBAPPB - address of I/O appendage vector table	

31 (1F)

ISAM Section

32 (20) DEBNIEE - no. of extents in independent index area		DEBFIEB - address of first index extent	
36 (24) DEBNPEE - no. of extents in prime data area		DEBFPEB - address of first prime data area extent	
40 (28) DEBNOEE - no. of extents in independent overflow area		DEBFOEB - address of first overflow extent	

44 (2C) DEBRPSID - RPS device indicator (see note 7)	DEBEXPT DEBEXPTA - address of ISAM DEB extension
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47 (2F)

DEVICE DEPENDENT SECTION

Unit Record, Magnetic Tape, and Telecommunications Devices

32 (20) DEBSDVM - SET MODE (tape only)	DEBSUCBA DEBSUCBB - address of UCB associated with this data set (for telecom., field repeated for each line)
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35 (23)

IBM 3525 Card Punch

36 (24) DEBRSV06 - reserved	DEBRDCB DEBRDCBA - address of DCB for READ associated data set
40 (28) DEBRSV07 - reserved	DEBPDCB DEBPDCBA - address of DCB for PUNCH associated data set
44 (2C) DEBRSV08 - reserved	DEBWDCB DEBWDCBA - address of DCB for PRINT associated data set

47 (2F)

3540 Diskette I/O Unit Access Method

0 (0) DEBVOLAC volume accessibility (from VOL label)	1 (1) DEBDSSQL data set security qualifier	2 (2) DEBVSEQU volume sequence number	3 (3) DEBEAMFG flag byte (see note 9)
4 (4) Input: DEBDSID - data set identifier (8 bytes) Output: DEBXDTE - expiration date (6 bytes) DEBWTPTI - write protect indicator (1 byte) DEBRV008 - reserved (1 byte)			
12 (C) DEBBOE - BOE (beginning of extent) address (output only), or DEBEOD - EOD (end of data) address (input only)			
12 (C) DEBBOERV/ DEBEODRV reserved	13 (D) DEBBOETT/ DEBEODTT BOE/EOD track number	or 14 (E) DEBBOEO/ DEBEODO must be zero	15 (F) DEBBOESS/ DEBEODSS BOE/EOD sector number

Direct Access Storage Devices:

When ISAM is being used, this section follows the ISAM device dependent section. Otherwise it follows the basic section. This 16-byte segment is repeated for each extent.

0 (0) DEBDVMOD - file mask	DEBUCBAD DEBUCBA - address of UCB associated with this data set
4 (4) DEBBINUM - bin number	6 (6) DEBSTRCC - cylinder address for start of extent
8 (8) DEBSTRHH - read/write track address for start of extent	10 (A) DEBENDCC - cylinder address for end of extent
12 (C) DEBENDHH - read/write track address for end of extent	14 (E) DEBNMTRK - no. of tracks allocated to this extent 15 (F)

ACCESS METHOD DEPENDENT SECTION (follows device dependent section)

BSAM, QSAM, EXCP Access Method

0 (0) DEBVOLBT - X'10' = all previous extents have been filled	DEBVOLSQ DEBVLSEQ - vol. sequence number (see note 8)	2 (2) DEBVOLNM - number of volumes in data set
4 (4) DEBDSNM - member name; used only when an output data set has been opened for a member name	or	
4 (4) DEBRVS13 - reserved	DEBUTSAA DEBUTSAB - address of user totaling save area	
8 (8) DEBRVS14 - reserved		
12 (C) DEBBLKSI- maximum block size	14 (E) DEBLRECL- logical record length	15 (F)

BPAM (only one of the following fields is present)

0 (0) DEBEXTNM - see note (opposite) n-1	For a partitioned data set opened for input, each one-byte field contains the extent number of the first extent entry for each data set except the first, if two or more data sets (n) are concatenated. The number of bytes in the field is equal to one less than the number of data sets concatenated.
0 (0) DEBDSNAM - member name; used only when an output data set has been opened for a member name	11 (B)

BDAMFixed block records, relative track addressing, no track overflow (one for each extent)

0 (0)	DEBDBLK
DEBDBPT - no. of blocks per track	DEBDBPE - number of blocks per extent
3 (3)	

Fixed block records, relative track addressing, track overflow

0 (0)	DEBDTPP - number of tracks per period (this field appears only once in each DEB)
4 (4)	DEBDBPP - number of blocks per period (this field appears only once in each DEB)
8 (8)	DEBDBPEF - number of blocks per extent (this field appears only once for each extent)
11 (8)	

BTAM

This segment is used when a buffer pool or dynamic buffering is used. Otherwise the fields are set to zero.

0 (0)	DEBTBFRA
DEBRVS15 reserved	DEBTBFRB - address of buffer routine
4 (4)	DEBTCCWA
DEBRVS16 reserved	DEBTCCWB - address of first CCW on queue (this field repeated for each CCW on the channel program queue)
7 (7)	

GAM

0 (0)	DEBFUCBA
DEBRVS17 reserved	DEBFUCBB - address of first UCB
4 (4)	DEBLUCBA
DEBRVS18 reserved	DEBLUCBB - address of last UCB
7 (7)	

ISAM

ISAM Load Mode Extension (pointed to by DEBEXPT, offset X'2C')

0 (0)	DEBPUT - address of PUT module
4 (4)	DEBRPSL - address of RPS SIO appendage if you have not specified ADDRSPC = REAL
7 (7)	

ISAM Scan Mode Extension (pointed to by DEBEXPT, offset X'2C')

0 (0)	DEBPUT - address of PUT module, or DEBGET - address of GET module
4 (4)	DEBWKPT4 - address of UCB
8 (8)	DEBWKPT5 - address of GET appendage module
12 (C)	DEBCREAD - address of channel-end appendage for READ
16 (10)	DEBCSETL - address of channel-end appendage for SETL
20 (14)	DEBCWRIT - address of channel-end appendage for WRITE
24 (18)	DEBCCHK - address of channel-end appendage for write validity check
28 (1C)	DEBCREW - address of channel-end appendage for re-write
32 (20)	DEBCRECK - address of channel-end appendage for re-check

36 (24)	DEBAREAD - address of abnormal-end appendage for READ
40 (28)	DEBASETl - address of abnormal-end appendage for SETL
44 (2C)	DEBAWRIT - address of abnormal-end appendage for WRITE
48 (30)	DEBACHK - address of abnormal-end appendage for CHECK
52 (34)	DEBAREWT - address of abnormal-end appendage for re-write
56 (38)	DEBARECK - address of abnormal-end appendage for re-check
60 (3C)	DEBRPSST - address of RPS SIO module
63 (3F)	

BISAM Mode Extension (pointed to by DEBEXPT, offset X'2C')

0 (0)	DEBDISAD - address of privileged module entered when a BISAM macro instruction is executed
4 (4)	DEBWKPT4 - address of part 1 appendage module (abnormal and channel-end appendages)
8 (8)	DEBWKPT5 - address of part 2 appendage module (abnormal and channel-end appendages)
12 (C)	DEBFREED - address of dynamic buffering module
16 (10)	DEBRPSIO - address of a device dependent secondary SIO appendage if you have not specified ADDRSPC=REAL and if dynamic buffering is used
20 (14)	DEBSIOA2 - address of SIO appendage displaced by PGFX appendage if you have not specified ADDRSPC=REAL
23 (17)	

SUBROUTINE NAME SECTION

(follows access method dependent section, or the device dependent section if there is no access method dependent section)

0 (0)
 DEBSUBID - the last two bytes of the 8-byte module name for each access method subrtn, appendage subrtn, or IRB loaded by OPEN
 1 (1)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DEBSIOAB -32 (-20)	1... ..	DEBPGFX	Flag byte: Address in following 3 bytes can be used to determine the entry point for the page fix appendage. It is computed by adding 4 to the address of the entry point to the SIO appendage.
	.1.. ..	DEBSIOX	Enter SIO appendage, even when ERP is active.
	.0.. ..		Do not enter SIO appendage when ERP is active.
	..1.	DEBIOVR	EXCPVR request is valid.
	..0.		EXCPVR request invalid and will not be executed.
	...x		Reserved bit.
	... xxxx	DEBSIONP	Number of 2K pages to be fixed for SIO appendage.
2. DEBAMTYP -3 (-3)	X'84'	TCAMAP	
	X'82'	VTAM	
	X'81'	Subsystem	
	X'80'	ISAM	
	X'40'	BDAM	
	X'20'	SAM	
	X'10'	TAM	
	X'08'	GAM	
	X'04'	TCAM	
	X'02'	EXCP	
	X'01'	VSAM	
3. DEBOFLGS 8 (8)	xx..	DEBDISP	Data set status flags: Data set disposition.
	10..	DEBDSMOD	Modified data set.
	11..	DEBDSNEW	New data set.
	01..	DEBDSOLD	Old data set
	..1.	DEBEOF	Tape: EOF DASD: Format 1 DSCB byte 93 indicates that current volume is last volume of the data set.
	...1	DEBRLSE	DASD: Release unused external storage. Tape: Emulator tape with second generation format - may contain blocks of less than 12 characters.
	.... 1...	DEBDCB	DCB modification.
	.... .1..	DEBSPLIT	DASD: Split cylinder. Tape: 7-track emulator tape with possible mixed parity records.
	.... .1.	DEBLABEL	Nonstandard labels.
	.... ...1	DEBRERR	Tape: Use reduced error recovery procedure. DASD: Concatenated partitioned organization data sets processed by BPAM.

Flag Field	Bit	Mask Name	Meaning
4. DEBOPATB 12 (C)	1... ..	DEBABEND	Method of I/O processing, and the action to be performed when EOF occurs:
	.1.. ..	DEBZERO	ABEND owns dump data set DEB.
	..xx ..	DEBPOSIT	Always zero.
	..11 ..	DEBLEAVE	Data set position flags.
	..01 ..	DEBRERED	LEAVE.
	.... xxxx	DEBACCS	REREAD.
	.... 1111	DEBOUTPT	Type of I/O accessing.
	.... 0111	DEBOUTIN	OUTPUT.
	.... 0100	DEBUPDAT	OUTIN.
	.... 0011	DEBINOUT	UPDAT.
	.... 0001	DEBRDBCK	INOUT.
	.... 0000	DEBINPUT	RDBACK.
			INPUT.
5. DEBFLGS1 14 (E)	1... ..	DEBPWCKD	Flag field:
	.1.. ..	DEBEOFD	Password supplied during OPEN.
	..1.	DEBRIOA	EOF will not ask for an additional password.
	...x ...x		EOF encountered and deferred user label processing permitted (set by EOF for CLOSE).
	.... 1...	DEBCIND1	SIO appendage will be reentered for each subsequent SIO if first SIO fails due to a busy condition.
	.... .1..	DEBF1CEV	Reserved bits.
	.... ..1.	DEBAPFIN	DCB associated with this DEB is being processed by compatibility interface routines.
			EOV processing occurred during CLOSE (set on by EOV; tested and set to zero by CLOSE).
			Authorized modules loaded from this library do not cause loss of authorization for the job step (APF).
6. DEBPROTG, DEBDEBID 24 (18)	xxxx	DEBPROTG	Protection key.
	.... 1111	DEBDEBID	This block is a DEB.
7. DEBRPSID 44 (2C)	1... ..	DEBRPSP	RPS (rotational position sensing device indicators:
	.1..	DEBRPSI	Prime data area is on RPS device.
	..1.	DEBRPSO	Independent index area is on RPS device.
	...1	DEBRPSAP	Independent overflow area is on RPS device.
	.... xxxx		RPS SIO appendage has been loaded.
			Reserved bits.
8. DEBVLSEQ 1 (1)	For direct access, the sequence number of this volume is relative to the first volume of the data set. For tape, the sequence number is relative to the first volume processed.		
9. DEBEAMFG 3 (3)	1... ..	DEBMULTI	Flag byte:
	.1..	DEBDSOPN	Multivolume file.
	..1.	DEBVAMSG	Data set is open.
	...1	DEBSECVL	Volume accessibility message has been issued.
	.... xxxx		Secure volume.
			Reserved bits.

Data Event Control Block (DECB)

(Mapped by IHADECB)

DECBs contain information about I/O operations requested by READ and WRITE instructions.

BSAM

0 (0) DECSDECB - event control block (ECB)	
4 (4) DECTYPE or DECBPTR (4 bytes) - type of I/O request (see note 1) or pointer to next DECB (1419 and 1275 only)	6 (6) DECLNGTH - length of key and data
8 (8) DECDCBAD - address of DCB to which this I/O request is related	
12 (C) DECAREA - address of key and data	
16 (10) DECIOBPT - address of IOB	
20 (14) DECNEXTA - address of next address feedback field (present only if R is coded in WRITE macro)	
23 (17)	

3886 Optical Character Reader (for READ RBL)

20 (14) DECBHDRA - address of 3886 data header record after READ	
24 (18) DECBLNNM - address of line number or negative of line number	
28 (1C) DECBLFMT - address of line format number or negative of line format number	
31 (1F)	

BISAM

0 (0) DECBECB - event control block (ECB)		
----- or -----		
0 (0) DECBECBF flag byte (see note 2)	DECBRB DECBRBA - address of RB for program awaiting event completion	
4 (4) DECBTYP1 option byte (see note 3)	5 (5) DECBTYP2 type of I/O (see note 4)	6 (6) DECBLGTH - number of bytes read or written
8 (8) DECBDCBA - address of data control block (DCB)		
12 (C) DECBAREA - address of area in storage for record		
16 (10) DECBLOGR - address of logical record		
20 (14) DECBKEY - address of key portion of record		
24 (18) DECBEXC1 exceptional condition (see note 5)	25 (19) DECBEXC2 exceptional condition (see note 6)	

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DECTYPE			
Byte 1	1...	DECLNS	Type of I/O request:
4 (4)	.xxx xxxx		S coded for length.
			Reserved bits.
Byte 2	1...	DECRDSF	READ SF.
5 (5)	.1..	DECRDSB	READ SB.
	..1.	DECWRSF	WRITE SF.
	...1	DECWRSD	WRITE SD.
	.... .1..	DECWRSZ	WRITE SZ.
	..1. .1..		WRITE SFR.
	1... .1..		READ RBL.
	.... x.x.		Reserved bits.
2. DECBECBF			
0 (0)	1...	DECBWAIT	Event completion flags:
	.1..	DECBPOST	Awaiting completion of event.
			Event has completed. For abnormal completion, fields DECBEXC1 and DECBEXC2, offset X'18', will show the reason.
	..xx xxxx		Reserved bits.
3. DECBTYP1			
4 (4)	.... .1.	DECBLSNS	Options:
	.... .1..	DECBARS	Length coded as S.
	xxxx xx..		Area coded as S.
			Reserved bits.
4. DECBTYP2			
5 (5)	1...	DECBRDK	Type of I/O request:
	.1..	DECBRDKU	READ K.
	.... 1..	DECBWRK	READ KU.
	.... .1..	DECBWRKN	WRITE K.
	.x.x ..xx		WRITE KN.
			Reserved bits.
5. DECBEXC1			
24 (18)	1...	DECEXRNF	Exceptional condition code:
	.1..	DECEXRNC	Record not found.
	..1.	DECEXNSP	Record length check.
			Space not found in which to add a record.
	...1	DECEXINV	Invalid request.
	.... 1..	DECEXERR	Uncorrectable I/O error.
	.... .1..	DECEXUBK	Unreachable block.
	.... .1..	DECEXOFL	Overflow record.
	.... .1..	DECEXDUP	Duplicate record presented for inclusion in data set.
6. DECBEXC2			
25 (19)	.... .1.	DECEXASR	Exceptional condition code:
			Execution of last channel program was instituted by an asynchronous routine.
	.... .1..	DECEXRKU	Previous macro instruction was READ KU.
	xxxx xx..		Reserved bits.

BTAM

0 (0) DECSDECB - event control block (ECB)		
4 (4) DECTYPE - programming options (see note 1)		6 (6) DECLNGTH - length of buffer or length of message area
8 (8) DECBUFCT/ DECONLTT (see note 2)	9 (9) DECDCBAA - address of associated DCB	
12 (C) DECAREA - address of buffer or message area		
16 (10) DECSENS0 sense information	17 (11) DECSENS1 reserved	18 (12) DECCOUNT - residual count from CSW for last CCW executed
20 (14) DECENTRY DECCMCD DECENTRA - address of terminal list command for which error occurred		
24 (18) DECFLAGS operation status (see note 3)	25 (19) DECRLN relative line number	26 (1A) DECRESPN - response from terminal to addressing, and VRC/LRC response
28 (1C) DECTPCOD - TP operation code (see note 4)	29 (1D) DECERRST - I/O error status flags (see note 5)	30 (1E) DECCSWST - status bits from CSW for last CCW executed
32 (20) DECADRPT - address of previous entry in addressing list		
36 (24) DECPOLPT - contents depend on use of Autopoll, programmed polling, or BSC (see note 6)		

39 (27)

BSC Extension

40 (28) DECRSV56 - reserved	42 (2A) DECWLNG - length of data area
44 (2C) DECWAREA - address of data area	
47 (2F)	

Notes:

Flag Field

Bit

Mask Name

Meaning

1. DECTYPE

Byte 1

4 (4)

1...

DECRDAPL

Programming indicators:

READ, using Autopoll (OLT: OLT requested by ONLTST macro).

S coded for terminal entry.

.... .1..

DECSTRME

S coded for area.

.... ..1.

DECSAREA

S coded for length.

....1

DECSLNTH

Reserved bits.

.xxx x...

Byte 2

5 (5)

Command Code

00

TB

Write break.

01

TI

Read initial.

02

TI

Write initial.

03

TT

Read continue.

04

TT

Write continue.

05

TV

Read conversational.

06

TV

Write conversational.

07

TP

Read repeat (other than WTTA).

07

TE

WTTA: Read continue with identification exchange.

08

TA

Write positive acknowledgment.

09

TS

Read skip.

0A

TN

Write negative acknowledgment.

TN

Write disconnect (TWX).

TR

Write reset (BSC).

0B

TB

Read buffer.

0C

TL

Write at line address.

0D

TIO

Write initial optical.

TIV

Write initial conversational.

TTA

Read continue with leading acknowledgment.

0E

TS

Write erase.

TCO

Write invitational optical.

0F

TTV

Write continue conversational.

10

TD

Write disconnect.

TD

Write control (2750).

11

TC

Read connect.

TM

Read modified.

12

TIX

Write initial transparent.

TVO

Write conversational optical.

TUS

Write unprotected erase.

13

TTL

Read continue with leading graphics.

TPB

Read buffer from position.

14

TTX

Write continue transparent.

15

TQ

Read inquiry.

16

TQ

Write inquiry.

17

TPL

Read repeat with leading graphics.

19

TIQ

Read initial inquiry.

TMP

Read modified from position.

1A

TW

Write wait before transmitting.

1B

TRV

Read interrupt.

1C

TC

Write connect.

1D

TIVX

Write initial conversational transparent.

1E

TCW

Read connect with tone.

1F

TTVX

Write continue conversational transparent.

82

TIR

Write initial with reset.

83

TTR

Read continue with reset.

84

TTR

Write continue with reset.

85

TVR

Read conversational with reset.

86

TVR

Write conversational with reset.

87

TPR

Read repeat with reset.

8C

TLR

Write at line address with reset.

8E

TSR

Write erase and reset.

2. DECBUFCT

8 (8)

Contains a running count of buffers obtained by BTAM for the current read operation (dynamic buffering only).

DECONLTT

8 (8)

1... ..

DECONLTS

BSC/2760 flag byte;
OLT requested by ONLST macro instruction (BSC).

0... ..

.1... ..

DECRCVMS

OLT requested by RFT message (BSC).
Receiving test messages (BSC) or Type 11 OLT for 2760.
Sending test messages (BSC).
Reserved bits.

.0... ..

..xx xxxx

3. DECFLAGS

24 (18)

xxx.

10..

11..

.1..

Operation status:
Start-stop and BSC operations:
Error status message received (BSC).
WACK received.
Acknowledgment other than ACK-0 or ACK-1 received.
Wrong acknowledgment received.
One of the following:
TWX 33/35 terminal, BSC terminal:
Incorrect ID received.
Autopoll:
Index byte received does not match an active byte.
BSC network:
Contention occurred.
WTTA:
Contention occurred or incorrect ID received.
READ, dynamic buffering:
No buffer available (message lost).
One of the following:
OPENLST, POLLING:
Negative response to polling received, and end of list reached.
WRAPLST:
All entries are inactive.
Addressing:
Negative response to addressing received.
WTTA:
Last message received ended with EOT or timeout.
2741:
Power off or other intervention required.
WTTA:
Message ended with WRU signal.
BSC stations:
Reverse interrupt (RVI) sequence was received (see bit 1 also).
2741:
Write operation was ended by terminal interrupt.
3270:
Remote sense/status message was received.
WTTA:
Last message ended with WRU.
BSC:
STX-ENQ (ABORT) sequence received.

..1.

...1

.... 1...

.... .1.

.... .1.

.... ...1

4. DECTPCOD
28 (1C)

	Type of Terminal	Command
00		Any command issued by online test routine.
01		Disable when DISABLE is the first command of a channel program. Dial. Enable. Prepare. Write pad character. Write wait before transmitting. Write tone for data sets that do not generate a data tone.
02	WTTA	Sense - WT telegraph terminals. Write control characters \textcircled{D} \textcircled{C} \textcircled{C} \textcircled{C} before selection. Write EOT sequence before polling or addressing. Write response to text.
03	2740, Basic 2760	Write \textcircled{D} and 15 idle characters. Write \textcircled{D} PRE o. Write polling, addressing, or broadcast characters. Poll. Write turnaround sequence. Write CPU-ID sequence. Write ENQ.
04	TWX TWX, BSC BSC 2740 SC	Write space, sense (with station control).
	2260R 83B3 1030 WTTA	Write 2848 command. Write FIGS shift. Write 1. Write WRU. Write identification. Write padding characters. Write LTRS characters.
05		Read response to polling.
06		Read response to addressing.
07	TWX, BSC	Read ID response.
08	1030 1050 2740 1060 2260R BSC	Write end-of-addressing character after addressing.
09	2760	Write response to inquiry. Write response to text. Write EOB.
0A		NOP or TIC after poll in a READ with SSALST, SSAWLST, AUTOLST, or AUTOWLST. Read index (autopoll). Read response to polling (programmed polling).
0B	BSC	Read inquiry.
0C	BSC	Read response to inquiry.
10	2260R	Write at line address.
11		Read or write text.
12	2760	Write frame-change characters. Read skip or TIC for dynamic buffering.
13	BSC	Write end-of-transparent-text characters.
20		Start-stop read response to text.
21		All reset commands.
22		Read skip.
23		Write break.
24		Any command issued during OPEN, LOPEN or CLOSE (set address, enable, disable and set mode).
25	BSC	Read response to text.
40-4C		The last CCW executed was the first Read or Write Text CCW to be executed in a channel program using dynamic buffering.
50-53		Indicates the final command in the channel program (not necessarily the last command executed).
61-65		
80-8C		
90-93		
A1-A5		

5. DECERRST 29 (1D)	1... ..	DECSIO3	I/O error status flags: SIO resulted in a condition code of 3.
	.1..	DECUNDEF	Undefined error condition.
	.1.	DECERPER	An error condition occurred during an I/O operation initiated by the error recovery routines.
	...1	DECDIAGN	Diagnostic write/read operation ended because of error (2701 only).
	.... 1...	DECDSABL	Disable command issued to a switched-connected line by error recovery routine because of permanent error on that line.
6. DECPOLPT 36 (24)	.... .xxx		Reserved bits.
			One of the following:
			Programmed polling:
			Address of the current entry in the polling list.
			Autopoll:
			Byte 1: Indexed to current entry in polling list.
			Bytes 2-4: Address of polling list.
			BSC online test:
			Address of text data.
			BSC extension:
			Fields are present only if a sublist is coded for the area and length operands of the READ or WRITE macro instruction that defines the DECB.

BDAM

0 (0) DECSDECB - event control block (see note 1)	
4 (4) DECTYPE - type of I/O request (see note 2)	6 (6) DECLNGTH - length of data
8 (8) DECDCBAD - address of corresponding DCB	
12 (C) DECAREA - address of data	
16 (10) DECIOBPT - address of IOB	
20 (14) DECKYADR - address of key	
24 (18) DECRCPT - address of block reference field	
28 (1C) DECRSV36 reserved	DECNA DECNAA - address of next address feedback field (only if R or RU is coded in READ macro)
31 (1F)	

Notes:

Flag Field	Bit	Mask Name	Meaning
1. DECSDECB			
Event control block:			
Byte 1 0 (0)	1... .. .xxx xxxx	DECBWAIT	<u>Waiting for event completion:</u> Waiting for completion of event. Reserved bits.
Bytes 2-4 1 (1)			Address of request block for the program awaiting event completion.
Byte 1 0 (0)	.1.. x.xx xxxx	DECBPOST	<u>After event completion:</u> Event has completed. Reserved bits.
Byte 2 1 (1)	1... .. .1.. .... .1.. .... ...1 .......1 .......1 .....1 .....1 ..	DECCCRNF DECCCRLC DECCCNPS DECCCNV DECCERR DECCCEOD DECCCUER	Record not found. Record length check. Space not found. Invalid request. Uncorrectable I/O error. End of data. Uncorrectable error other than I/O error.
	.... ..1	DECCCREX	A READ with exclusive control was not preceded by a WRITE with exclusive control.
Byte 3 2 (2)	.1.. .... .1.. .... ...1 1.. .... .1.. .... ..1.... ..1	DECCCWRI DECCCEXS DECCCNBK DECCCWDI DECCCSDK DECCCOPT DECCCKFF	A WRITE macro instruction was addressed to an input data set. An extended search was specified with the DCBLIMCT field set to 0. Block requested is not within the data set. A write-by-identification (DI) addressed record zero. A search-on-key (DK) was specified with the DCBKEYLE field set to zero or without an address for the key. A macro instruction used an option not set in the DCB. The key for the fixed-length record to be added begins with X'FF'.
	x....		Reserved bit.
Byte 4 3 (3)			Reserved byte.
2. DECTYPE			
Type of I/O request:			
Byte 1 4 (4)	1... .. .1.. .... .1.. .... ...1 1.. .... .1.. .... ..1.... ..1	DECVERFY DECOFLOW DECEXSRC DECFCBCK DECACTAD DECDYNBF DECRCLEX DECRCLEBA	Verify. Overflow. Extended search. Feedback. Actual addressing. Dynamic buffering. Read exclusive. Relative block addressing.
Byte 2 5 (5)	1... .. .1.. .... ..11 1.. x.. 1.. 0.. .... .x.. .... .1.. .... .0.. .... ..1.... ..x	DECKEYS DECBKLNLS DECTYPRU DECTYPR DECOPRD DECSRKEY DECWRAAD	S coded for key addressing. S coded for block length. RU is suffixed to the type (bits 4 and 5) to indicate the next address can be either a data record or a capacity record, whichever occurred first. R is suffixed to the type (bits 4 and 5) to indicate the next data record address to be specified. Type of operation: READ. WRITE. Type of search argument: Key. ID. Add option of write operation. Reserved bit.

Device Name Table (DNT)

(CVTQLPAQ, offset X'BC' in CVT, points to the link pack area queue, a series of LRBs. Scan the LRBs for DEVNAMET. Six bytes after DEVNAMET is the address of the DNT.)

The DNT contains all the device names that are in use. The information in this table and in the UCBs is used in the allocation of devices as specified in DD cards.

0 (0)

The number of 12-byte entries in the table. Each device type or group name has one entry.

3 (3)

IBM Generated Device Type:

The following 12-byte field is repeated for each device type.

0 (0)

Device type (left-justified and padded with blanks to right, if necessary): for example, 2400 indicates a 2400-series Magnetic Tape Drive.

8 (8)

Contents same as for UCBTYP field.

11 (B)

User Assigned Group Name:

0 (0)

Group name (left-justified and padded with blanks to right, if necessary): for example, MAGTAPE.

8 (8)

Entry for first group name contains a 1; digit increased by 1 for each additional group name.

10 (A)

(see note 1)

11 (B)

Zero

Note:

1. xxxx xx..

If one device is associated with the group name, these bits are the same as bits 0 - 5 of the device class field (byte 3) of the UCBTYP field. If more than one device is associated with the group name, these bits indicate the result of ORing the device class field of the UCBTYP field for each device.

.... ..00

Always zero.

Format 0 and Format 1 DSCB

Format 0 DSCB (The unused records in the VTOC)

0 (0)
binary zeros
139 (8B)

Format 1 DSCB (identifier) (Pointed to by JFCBDSCB X'35'; mapped by IECSDSL1; describes a data set or VSAM data space and the first three extents.)

0 (0)	DS1DSNAM - data set name in EBCDIC			43 (2B)
44 (2C) DS1FMTID format 1 identifier (X'F1')	45 (2D) DS1DSSN - volume serial number of first or only volume on which data set resides			
			51 (33) DS1VOLSQ volume sequence number (binary)	
DS1VOLSQ continued	53 (35)	DS1CREDT - binary creation date in form ydd		
56 (38)	DS1EXPDT - binary expiration date in form ydd			59 (3B) DS1NOEPV - no. of extents, not including user label track
60 (3C) DS1NOBDB - no. of bytes used in last PDS directory	61 (3D) reserved	62 (3E) DS1SYSCD - programming system code ID in EBCDIC		
			75 (4B) reserved	
			74 (4A)	
			82 (52) DS1DSORG - data set organization (see note 1)	
81 (51)				
84 (54) DS1RECFM record format (see note 2)	85 (55) DS1OPTCD option code (same as DCBOPTCD X'34')	86 (56) DS1BLKL - block length (type F records), or max blksize (U or V records)		
88 (58)	DS1LRECL - logical record length (see note 3)		90 (5A) DS1KEYL - key length (0 - 255)	91 (5B) DS1RKP relative key position

DSIRKP continued	93 (5D) DS1DSIND indicators (see note 4)	94 (5E) DS1SCALO - allocation parameters (see note 5)
DS1SCALO continued		98 (62) DS1LSTAR - address of last block written in data set (form TTRLL)
DS1LSTAR continued	101 (65) DS1TRBAL - bytes remaining on last track used	103 (67) reserved
	105 (69) DS1EXT1 - description of first extent (see note 6)	
		115 (73)
	DS1EXT2 - description of second extent (see note 6)	
	125 (70) DS1EXT3 - description of third extent (see note 6)	
		135 (87)
	DS1PTRDS - CCHHR of format 2 or format 3 DSCB if one exists	
		139 (88)

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Code</u>	<u>Meaning</u>
1. DS1DSORG Byte 1 82 (52)			
	1... ..	IS	Indexed sequential.
	.1.. ..	PS	Physical sequential.
	..1. ..	DA	Direct access.
	...1 ..	CX	BTAM or QTAM line group.
	.... .1.	PO	Partitioned.
	.... .1.	U	Unmovable: the data contains location-dependent information.
	.... xx..		Reserved bits.
Byte 2 83 (53)			
	1... ..	GS	Graphics.
	.1.. ..	TX	TCAM line group.
	..1. ..	TQ	TCAM message queue.
	...1 ..	AM	VSAM.
	.... .1.	TR	TCAM 3705.
	.... xx		Reserved bits.
2. DS1RECFM 84 (54)			
	10.. ..	F	Record format: Fixed length.
	01.. ..	V	Variable length.
	11.. ..	U	Undefined length.
	..1.	T	Track overflow.
	...1	B	Blocked: may not occur with undefined (U).
	.... 1..	S	Fixed length: Standard blocks; no truncated blocks or unfilled tracks.
	.... .10.	A	Variable length: Spanned records.
	.... .01.	M	ANSI control character.
	.... .00.		Machine control character.
	.... ...0		No control character.
			Always zero.
3. DS1LRECL 88 (58)			
<u>Format</u>			<u>Meaning</u>
Fixed length			Record length
Undefined length			Zero
Variable length unspanned			Maximum record length
Variable length spanned			< 32,756 bytes: maximum record length
			> 32,756 bytes: X'8000'
<u>Flag Field</u>	<u>Bit</u>		<u>Meaning</u>
4. DS1DSIND 93 (5D)			
	1... ..		Data set indicators:
	..1.		Last volume on which data set resides.
	...1 .0..		Block length is a multiple of 8 bytes.
	...1 .1..		Password is required to read or write.
	.... .1..		Password is required to write but not to read.
	...x x.xx		Reserved bits.

5. DS1SCALO
94 (5E)

Byte 1
94 (5E) 00..

01..
10..
11..
.... 1..
.... 1..
.... ..1.
.... ...1
...xx

Bytes 2-4
95 (5F)

6. DS1EXT1
105 (69)

Byte 0
105 (69) 00

01
02
04
40
80
81

Byte 1
106 (6A)
Bytes 2-5
107 (6B)
Bytes 6-9
111 (6F)

Secondary allocation - type of request issued for the initial allocation and to be used for subsequent extensions.

Original request was:

In tracks relative to a specific location. No secondary allocation is allowed.
In blocks (physical records).
In tracks.
In cylinders.
For a contiguous extent.
For the maximum contiguous extent on the volume.
For the five (or less) largest extents that are greater than or equal to a specified minimum.
In records, to be rounded up to a cylinder boundary.
Reserved bits.

Secondary allocation quantity - number of blocks, tracks, or cylinders to be requested at end of data set when processing a sequential or partitioned data set.

Extent description for the first extent (also used in Format 3 and 4 DSCBs).

Data set extent type indicator:
Following 9 bytes do not indicate any extent.
Extent contains user's data blocks or is a prime area (IS data sets).
Extent is an overflow area (IS data sets).
Extent is an index area (IS data sets).
First extent describes the user label extent.
Extent described is sharing cylinders.
Extent on cylinder boundaries.

Extent sequence number (M).

Lower limit of extent (CCHH).

Upper limit of extent (CCHH).

Format 2 DSCB

(Describes the indexes of an ISAM data set.)

0 (0) Unique key field X'02'	1 (1) DS22MIND - starting address of second-level master index (MBBCCHH)		
8 (8) DS2L2MEN - CCHHR of last active index entry in second-level master index			
13 (D) DS23MIND - address of first track of third-level master index (MBBCCHH)			
20 (14) DS2L3MIN - CCHHR of last active index entry in third-level master index			
25 (19) Reserved			
35 (23)			
36 (24) DS2LPDT - last prime data track on last prime data cylinder			
44 (2C) DS2FMTID format identification (EBCDIC)= X'F2'	45 (2D) DS2NOLEV number of index levels (binary)	46 (2E) DS2DVIND master index for these many tracks	47 (2F) DS21RCYL HHR of first data record on each cylinder
DS21RCYL continued		50 (32) DS2LTCYL - HH of last data track on each cylinder	
52 (34) DS2CYLOV - no. of tracks of cyl over- flow on each cylin- der	53 (35) DS2HIRIN - highest possible R of high- level index entries	54 (36) DS2HIRPR - highest possible R on prime data tracks (Format F)	55 (37) DS2HIROV - highest possible R on over- flow tracks (Format F)

56 (38) DS2RSHTR - R of last data record on shared track	57 (39) DS2HIRT1 - highest possible R on unshared track of track index	58 (3A) DS2HIIOV - highest possible R for ind ovflw tracks (Fmt F)	59 (3B) DS2TAGDT - no. of records tagged for deletion
DS2TAGDT continued	61 (3D) DS2RORG3 - no. of READs and WRITEs to succeeding overflow records during last use of data set		
64 (40) DS2NOBYT - no. of bytes for highest level index	66 (42) DS2NOTRK no. of tracks for highest level index	67 (43) DS2PRCTR no. of records in prime data area	
DS2PRCTR continued			71 (47) DS2STIND status indicators (see note 1)
72 (48) DS2CYLAD - address of first track of cylinder index (MBBCCHH)			
			79 (4F)
DS2ADLIN - address of first track of lowest - level master index (MBBCCHH)			
			86 (56)
DS2ADHIN - address of first track of highest - level index (MBBCCHH)			
		93 (5D) DS2LPRAD - address of last record in prime data area (MBBCCHHR)	
		101 (65) DS2LTRAD - CCHHR of last normal entry in track index on last cylinder containing prime data records	
		106 (6A) DS2LCYAD - CCHHR of last index entry in cylinder index	

DS2LCYAD continued

111 (6F)

DS2LMSAD - CCHHR of last index entry in master index

116 (74)

DS2LOVAD - address of last record written in current independent overflow area (MBBCCCHHR)

124 (7C)

DS2BYOVL - no. of bytes remaining on current independent overflow track

126 (7E)

DS2RORG2 - no. of tracks remaining in independent overflow area

128 (80)

DS2OVRCT - no. of records in overflow area

130 (82)

DS2RORG1 - no. of cylinder overflow areas that are full

132 (84)

DS2NIRT - HHR of dummy track index entry

135 (87)

DS2PTRDS - address of format 3 DSCB if present (CCHHR)

139 (8B)

Note 1:

Flag

Field

Bit

Meaning

DS2STIND

71 (47)

.1..

..1.

.... .1.

.... .1

x..x xx..

Status indicators:

Key sequence checking is to be performed

Initial load has been completed

Last block full

Last track full

Reserved bits



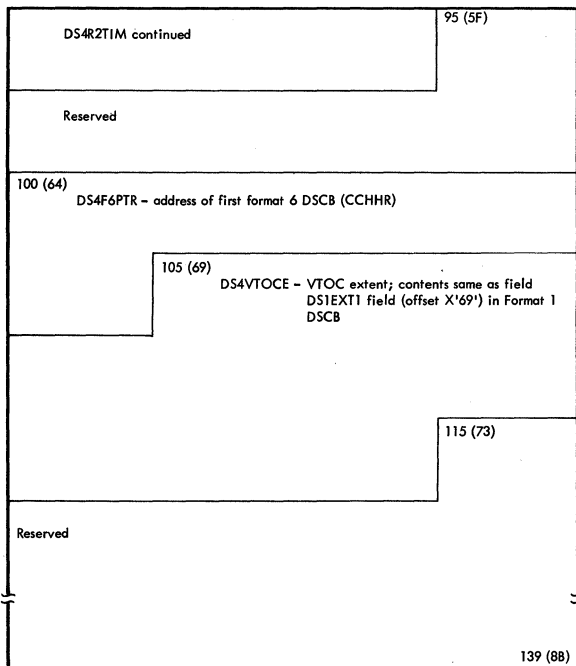
Format 3 DSCB

(Pointed to by Format 1 or Format 2 DSCB; describes the fourth through sixteenth extents of a data set or VSAM data space.)

0 (0) Key identifier - X'03' in each byte	
4 (4) DS3EXTNT - four extent descriptions, each identical to the DS1EXT1 field (offset X'69') in Format 1 DSCB	
44 (2C) DS3FMTID format identifier X'F3'	45 (2D) DS3ADEXT - nine extent descriptions, each identical to DS1EXT1
135 (87)	
DS3PTRDS - reserved (contains binary zeros)	
139 (8B)	

(Describes the extent and contents of the VTOC and volume and device characteristics.)

0 (0) Padding bytes - X'04' in each byte			43 (2B)		
44 (2C) DS4IDFMT - format 4 identifier X'F4'		45 (2D) DS4HPCHR - highest disk address of format 1 DSCB (CCHHR)			
		50 (32) DS4DSREC - no. of available format 0 DSCBs in the VTOC			
52 (34) DS4HCCHH - CCHH of next alternate track					
56 (38) DS4NOATK - no. of alternate tracks remaining		58 (3A) DS4VTOCI VTOC indicators (see note 1)		59 (3B) DS4NOEXT X'01' = VTOC is one extent	
60 (3C) Reserved		62 (3E) DS4DEVSZ - device size (no. of logical cylinders and tracks)			
DS4DEVSZ continued		66 (42) DS4DEVTK - no. of available bytes on track			
68 (44) DS4DEVOV - no. of overhead bytes (see note 2)		70 (46) DS4DEVK - bytes to subtract from DEVOV, DEVI, or DEVL if no key		71 (47) DS4DEVFG device indicators (see note 3)	
72 (48) DS4DEVTL - device tolerance (equal to 512 x block length)		74 (4A) DS4DEVDT - no. of DSCBs that can be contained on a track		75 (4B) DS4DEVDB - no. of PDS blocks that can fit on one track	
76 (4C) DS4AMTIM - VSAM time stamp (indicates when VSAM data space was created, modified or dumped)					
84 (54) DS4AMCAT - VSAM catalog indicator DS4VSIND - VSAM indicators (see note 4)		DS4VSCRA - relative track location of the CRA		87 (57)	
DS4R2TIM - VSAM volume/catalog match time stamp					



Notes:

Flag Field	Bit	Meaning
1. DS4VTOCI 58 (3A)	1...	VTOC indicators: Either no Format-5 DSCBs exist, or they do not reflect the true status of the volume.
	0... 1...	Accurate Format-5 and 6 DSCBs now exist. This volume may contain DOS data sets that OS/VS1 cannot process.
	.... .1..	A DADSM function has been prematurely terminated. Possible VTOC errors exist.
	.xxx ..xx	Reserved bits.

2. DS4DEVOV
68 (44)

Overhead bytes for any keyed block on the 2305. If bit 4 of byte X'47' of DSCB4 is set to 1, this field (DS4DEVOV) is a two-byte field containing a binary count of the number of bytes occupied by the count field, gaps, and check bytes of a keyed record.

If bit 4 of byte X'47' is zero, this field (DS4DEVOV) consists of the following subfields:

DS4DEVI (1 byte)
68 (44)

Number of bytes (overhead) occupied by the count field, gaps, and check bits of a keyed record that is at the last record on a track.

DS4DEVL (1 byte)
69 (45)

Number of bytes (overhead) occupied by the count field, gaps, and check bits of a keyed record that is the last record on a track.

3. DS4DEVFG
71 (47)

.... 1...

Flag byte:

The keyed record overhead field (DS4DEVOV) is used as a 2-byte field to specify the overhead required for a keyed record.

.... .1..

The CCHH of an absolute address is used as a continuous binary value.

.... ..1.

The CCHH of an absolute address is used as four separate binary values.

.... ...1

A tolerance factor must be applied to all but the last block of the track.

xxxx

Reserved bits.

4. DS4VSIND
84 (54)

1...

VSAM indicators:

A VSAM catalog references this volume.

.1..

The VSAM data sets on this volume are unuseable because an MSS CONVERTV command has not completed successfully for this volume.

..xx xxxx

Reserved bits.

Format 5 DSCB

(Describes the space on a volume that has not been allocated to a data set or to VSAM (available space)).

0 (0) DS5KEYID - key identification (X'05' in each byte)	
4 (4) Binary relative track address of extent available for allocation	DS5AVEXT Binary number of entirely unused cylinders in extent
Binary number of unused tracks, besides those in unused cylinders	9 (9) DS5EXTAV - seven available extents, each described in the format used by DS5AVEXT
43 (2B)	
44 (2C) DS5FMTID format 5 identifier X'F5'	45 (2D) DS5MAVET - eighteen available extents, each described in the format used by DS5AVEXT
134 (86)	
135 (87)	
DS5PTRDS - CCHHR address of the next format 5 DSCB, if it exists	
139 (8B)	



(Describes the extents shared by two or more data sets (split-cylinder extents)).

0 (0) DS6KEYID - key identification (X'06' in each byte)	
4 (4) Relative track address of first cylinder	DS6AVEXT Number of full cylinders being shared
Number of data sets sharing the extent	9 (9) DS6EXTAV - seven shared extents, each described in the format used by DS6AVEXT
43 (2B)	
44 (2C) DS6FMTID format 6 identifier X'F6'	45 (2D) DS6MAVET - eighteen shared extents, each described in the format used by DS6AVEXT
134 (86)	
135 (87)	
DS6PTRDS - CCHHR address of the next format 6 DSCB, if it exists	
139 (8B)	

Event Control Block (ECB)

The ECB is used for communication between various components of the control program, as well as between processing programs and the control program. An ECB is the subject of WAIT and POST macro instructions.

+0 (0) (see note 1)	+1 (1) (see note 2)
W | C |	bit 31 (see note 3)

Notes:

1. Awaiting completion of an event:
 1... W - Waiting for completion of an event.
 After completion of an event:
 .1... C - The event has completed.
 ..xx xxxx Completion code.

One of the following completion codes appears at the completion of a channel program:

Access Methods Except BTAM, TCAM, BDAM, BISAM, BSAM, and VTAM

- | | |
|----|---|
| 7F | Channel program has terminated without error. (CSW contents useful.) |
| 41 | Channel program has terminated with permanent error. (CSW contents useful; CCW address may be useful or zeros.) |
| 42 | Channel program has terminated because a direct-access extent address has been violated. (CSW contents do not apply.) |
| 43 | I/O ABEND condition occurred for error transient loading task. (CSW contents do not apply.) |
| 44 | Channel program has been intercepted because of permanent error associated with device end for previous request. The intercepted request may be reissued. (CSW contents do not apply.) |
| 48 | Request element for channel program has been made available after the channel program has been purged. (CSW contents do not apply.) |
| 4B | One of the following errors occurred during tape error recovery processing: <ul style="list-style-type: none"> • The CSW command address in the IOB was zeros. • An unexpected load point was encountered. (CSW contents do not apply.) |
| 4F | Error recovery routines have been entered because of direct-access error but are unable to read home address or record 0. (CSW contents do not apply.) |

BTAM

- 7F Completed normally.
- 41 Completed with an I/O error.
- 44 I/O request rejected.
- 48 Enable command halted, or, I/O operation purged.

BSAM/TCAM

- 7F Normal completion (work unit in work area).
- 70 The SETEOF macro was issued in the message command program (no work unit in work area).
- 5E TCAM quick shutdown has begun. Request is rejected.
- 5C Congested destination message queue data set (write only).
- 58 Sequence error.
- 54 Invalid message destination.
- 52 Work area overflow.
- 51 1) READ issued with a POINT macro to retrieve an entire queue; message incomplete on queue.
or
2) Associated TPROCESS queue has been disabled by TCAM because the queue was inactive during a complete reusable disk cycle.
- 50 Message was not found when READ was issued in conjunction with POINT to retrieve a message.
- 48 Request element for channel program has been made available after it has been purged. (CSW contents do not apply.)
- 41 Channel program terminated with permanent error. (CSW status bytes useful; CCW address may be useful.)
- 40 Data is on read-ahead queue.
- *02 End-of-queue condition (not end-of-file).
- *01 Read-ahead queue empty, but destination queue not empty.

BDAM and BISAM

- 40 Event has completed. See Data Event Control Block description for completion code information.

VTAM

- 40 Event has completed. See VTAM Macro Language Reference for a description of additional completion information for VTAM.

- 2. Awaiting completion of an event:
Request block address
After completion of the event:
Zeros, or remainder of completion code.
Events table processing:
Address of the EVENTS table.
- 3. If bits 0 and 31 are both on, this ECB is associated with an EVENTS table.

*Not the result of a POST. You must issue a WAIT to determine if the event has completed. OS/VS TCAM Programmer's Guide explains these codes more fully.

ENQ/DEQ Parameter List

(Pointed to by register 1 upon entry to ENQ/DEQ)

-4 (-4) Address of TCB			
0 (0) LISTEND element in parm list (see note 1)	1 (1) LMINOR - length of minor resource (0 if GENERIC=YES, ALL, or COND)	2 (2) PARMCDS parameters (see note 2)	3 (3) Return code
4 (4) Address of major resource name (0 if GENERIC = ALL or COND)			
8 (8) Address of minor resource name (0 if GENERIC = YES, ALL, or COND)			
12 (C) Pointer to UCB address (for RELEASE macro)			
15 (F)			

Notes:

Flag Field	Bit	Meaning
1. LISTEND		
0 (0)	1...	Last entry in parameter list.
	.1..	No directed ENQ/DEQ or generic DEQ.
	.... 1...	SAVE=YES specified for ENQ.
	.... .11.	GENERIC=ALL specified for DEQ.
	.... .10.	GENERIC=COND specified for DEQ.
	.... .01.	GENERIC=YES specified for DEQ.
	.... ...1	Directed ENQ/DEQ.
2. PARMCDS		
2 (2)	1...	Shared request.
	0...	Exclusive request.
	.1..	Request is for a resource known to the system.
	.1.. 1...	Request is for a resource known across systems.
	..1.	System-must-complete is requested.
	...1	Step-must-complete is requested.
	.... 1...	Request is for reserved resource.
	.... 0...	Request is for resource of this job-step.
	.... .111	RET=TEST.
	.... .011	RET=USE.
	.... .01.	RET=CHNG.
	.... ...1	RET=HAVE.

Exit List (EXLST)

(Pointed to by ACBEXLST, offset X'24' in ACB; mapped by IFGEXLST)

The exit list contains addresses of user exit routines associated with a particular VSAM data set or VTAM application, together with flags giving information about each exit routine. Supply the information in the EXLST macro instruction.

The length of the exit list varies according to the exits specified. The following table gives the minimum length when the corresponding exit is specified, and the purpose of each exit.

Exit	Length	Purpose
EODAD	10 bytes	For special processing when the end of a data set is reached by sequential access.
SYNAD	15 bytes	For analyzing physical errors.
LERAD	20 bytes	For analyzing logical errors.
SCIP (VTAM)	25 bytes	For processing when session control input is received.
LOGON (VTAM)	30 bytes	For processing user LOGON requests to an application.
JRNAD (VSAM)	35 bytes	For journalling as data records are processed.
DFASY (VTAM)	35 bytes	For processing when data flow asynchronous input is received.
OPENAD	40 bytes	For special processing when the ACB is being opened.
RESP (VTAM)	40 bytes	For processing when a response is received.
LOSTERM (VTAM)	45 bytes	For special processing when a terminal is lost by an application.
RELREQ (VTAM)	50 bytes	For special processing when a terminal held by an application is required by another application.
ATTN (VTAM)	60 bytes	For handling an unsolicited attention interrupt coming from a terminal held by an application.
TPEND (VTAM)	65 bytes	For special processing by an application when VTAM is closing down.

The control block layout below shows the EXLST as it exists when you code IFGEXLST AM=VTAM. If you don't code AM=VTAM, the macro stops at X'27' following field EXLOPNP.

0 (0) EXLID exit list ID=X'81'	1 (1) EXLSTYP exit list subtype (see note 1)	2 (2) EXLLEN/EXLLEN2 - length of exit list	
4 (4) Reserved	5 (5) EXLEODF - EODAD description (see note 2)	6 (6) EXLEODP - EODAD exit address	
EXLEODP continued		10 (A) EXLSYNF - SYNAD description (see note 3)	11 (B) EXLSYNP - SYNAD exit address
EXLSYNP continued			15 (F) EXLLERF - LERAD description (see note 4)

16 (10) EXLLERP - LERAD exit address			
20 (14) EXLSCIPP - SCIP description X'80' = exit present	21 (15) EXLSCIPP - SCIP exit address		
EXLSCIPP continued	25 (19) EXLLGNF-LOGON description X'80' = exit present	26 (1A) EXLLGNP - LOGON exit address	
EXLLGNP continued		30 (1E) EXLJRN/EXLDFASF JRNAD/DFASY description (see note 5)	31 (1F) EXLJRN/EXLDFASF JRNAD/DFASY exit address
EXLJRN/EXLDFASF continued			35 (23) EXLOPNF/EXLRESPP OPENAD/RESP description (see note 6)
36 (24) EXLOPNP/EXLRESPP - OPENAD/RESP exit address			
40 (28) EXLNLGNF - LOSTERM description X'80' = exit present	41 (29) EXLNLGNP - LOSTERM exit address		
EXLNLGNP continued	45 (2D) EXLRLRQF-RELREQ description X'80' = exit present	46 (2E) EXLRLRQP - RELREQ exit address	
EXLRLRQP continued		50 (32) Reserved	
52 (34) Reserved			55 (37) EXLATTNF-ATTN entry description X'80' = exit present
56 (38) EXLATTNP - ATTN exit address			
60 (3C) EXLTPNDF-TPEND description X'80' = exit present	61 (3D) EXLTPNDP - TPEND exit address		
EXLTPNDP continued			

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. EXLSTYP 1 (1)	0010 0000 0001 0000 0001 0001 0000 0000	EXLSVTAM EXLSVSAM EXLSVRP EXLSUB	Exit list subtype: VTAM. VSAM. VRP. Exit list.
2. EXLEODF 5 (5)	1... .. .1.. .. ..1. .... ...x xxxx	EXLEODS EXLEODA EXLEODK	EODAD entry description: EODAD exit present. EODAD exit active. EXLEODP points to the name of the EODAD exit routine. Reserved bits.
3. EXLSYNF 10 (A)	1... .. .1.. .. ..1. .... ...x xxxx	EXLSYNS EXLSYNA EXLSYNK	SYNAD entry description: SYNAD exit present. SYNAD exit active. EXLSYNP points to the name of the SYNAD exit routine. Reserved bits.
4. EXLLERF 15 (F)	1... .. .1.. .. ..1. .... ...x xxxx	EXLLERS EXLLERA EXLLERK	LERAD entry description: LERAD exit present. LERAD exit active. EXLLERP points to the name of the LERAD exit routine. Reserved bits.
5. EXLJRNF 30 (1E)	1... .. .1.. .. ..1. .... ...x xxxx	EXLJRNS EXLJRNA EXLJRNK	JRNAD entry description: JRNAD exit present. JRNAD exit active. EXLJRNP points to the name of JRNAD exit routine. Reserved bits.
EXLDFASF 30 (1E)	1... .. .xxx xxxx	EXLDFASS	DFASY entry description: DFASY exit present. Reserved bits.
6. EXLOPNF 35 (23)	1... .. .1.. .. ..1. .... ...x xxxx	EXLOPNS EXLOPNA EXLOPNK	OPENAD entry description: OPENAD exit present. OPENAD exit active. EXLOPNP points to the name of the OPENAD exit routine. Reserved bits.
EXLRESPF 35 (23)	1... .. .xxx xxxx	EXLRESPS	RESP entry description: RESP exit present. Reserved bits.

Fixed Low Core (FLC)

(Mapped by IHAFLC)

This macro maps System/370 low storage hardware assignments 0 - 512 (X'00' - X'200').

0 (0)	At IPL: FLCIPPSW - IPL PSW After IPL: FLCRNPSW - restart new PSW
8 (8)	At IPL: FLCICCW1 - IPL CCW1 After IPL: FLCROPSW - restart old PSW
16 (10)	At IPL: FLCICCW2 - IPL CCW2 After IPL: FLCCVT - address of CVT (4 bytes), followed by reserved (4 bytes)
24 (18)	FLCEOPSW - external old PSW
32 (20)	FLCOPSW - SVC old PSW
40 (28)	FLCPOPSW - program - check old PSW

48 (30)	FLCMOPSW - machine - check old PSW
56 (38)	FLCIOPSW - I/O old PSW
64 (40)	FLCCSW - channel status word
72 (48)	FLCCAW - channel address word
76 (4C)	FLCCVT2 - address of CVT (used by dump routines)
80 (50)	FLCTIMER - timer
84 (54)	FLCTRACE - address of trace table header
88 (58)	FLCENPSW - external new PSW

96 (60) FLCSNPSW - SVC new PSW		
104 (68) FLCPNPSW - program - check new PSW		
112 (70) FLCMNPSW - machine - check new PSW		
120 (78) FLCINPSW - I/O new PSW		
128 (80) reserved		
132 (84) reserved - set to zero		134 (86) FLCEICOD - external interruption code
136 (88) reserved - set to zero	137 (89) FLCSVILC X'06' = SVC ILC	138 (8A) FLCSVCN - SVC interruption code
140 (8C) reserved - set to zero	141 (8D) FLCPIILC X'06' = program check ILC	142 (8E) FLCPICOD - program interruption code
144 (90) FLCTEA		
reserved - set to zero		FLCTEAA - translation exception address

148 (94) reserved - set to zero	149 (95) FLCMCNUM monitor class number	150 (96) FLCPCD program event recording code	151 (97) reserved - set to zero
152 (98) reserved - set to zero	FLCPCD FLCPCD - PC address		
156 (9C) reserved - set to zero	157 (9D) FLCMTRCD - monitor code		
160 (A0) reserved			
167 (A7)			

Machine Check Logout Area (FLCMCLA)

168 (A8) FLCCHNID - channel - ID	
172 (AC) reserved	FLCIOEL FLCIOELA - I/O extended logout (IOEL) pointer
176 (B0) FLCLCL - limited channel logout (ECSW)	
180 (B4) reserved	
184 (B8) reserved	FLCIOA FLCIOAA - I/O address
188 (BC) reserved	
231 (E7)	

232 (E8)	FLCMCIC - machine - check interruption code	
240 (F0)	reserved	
248 (F8)	FLCFSA reserved - set to zero	FLCFSAA - failing storage address
252 (FC)	FLCRGNCD - region code	
256 (100)	FLCFLA - fixed logout area	
		351 (15F)
352 (160)	FLCFPSAV - floating point register save area	
		383 (17F)
384 (180)	FLCGRSAV - general register save area	
		447 (1BF)
448 (1C0)	FLCCRSAV - control register save area	
		511 (1FF)



Free Queue Element (FQE)

(The FQE is pointed to by the boundary box for a system task TCB, or by the FQE describing the next higher free area within the partition, or by the PQA boundary box for a partition.)

0 (0)

FQEPTR - address of the FQE describing the next lower free area in virtual storage or PQA, or zero if last FQE

4 (4)

FQELNGTH - number of bytes in the described free area

7 (7)



Gotten Queue Element (GQE)

(Pointed to by TCBGQE, offset X'D8' in TCB, or by a previous GQE.)

0 (0) Address of next GQE on the queue (zero if last GQE)	
4 (4) Address of area of obtained storage	
8 (8) Subpool from which storage was obtained	9 (9) Number of bytes in the obtained storage
12 (C) Reserved	

Interruption Control Block (ICB)

(Pointed to by IOBCICB, offset X'-8' in IOB)

The ICB is created by OPEN routines when chained channel program scheduling is being performed. It is used by the access methods and is always pointed to by an IOB or by another ICB.

0 (0) ICBICBA - link address: address of next ICB. The last ICB points to the first ICB.			
4 (4) ICBECB - event control block			
8 (8) ICBFLAG1 flag byte (see note 1)	9 (9) ICBFLAG2 flag byte (see note 2)	10 (A) ICBSENS0 first device dependent sense byte	11 (B) ICBSENS1 second device dependent sense byte
12 (C) ICBECBPT - address of ECB to be posted upon completion of this channel program segment.			
16 (10) ICBFLAG3 I/O supervisor device dependent flags	17 (11) ICBCSW - low-order seven bytes of the last CSW (channel status for this request)		
24 (18) ICBSTART - address of the channel program to be executed			
28 (1C) ICBINCAM - tape: constant used to increment block count DASD: always zero		30 (1E) ICBINDIC X'80' = EOT or reflective spot sensed with read or write error	Reserved
32 (20) ICBSEEK (DASD only) No. of DEB extent to be used for this request (first is zero)			
Seek address for this I/O request			
			39 (27)

Notes:

Flag Field	Bit	Meaning
1. ICBFLAG1 8 (8)	00..	Flag byte 1:
	01..	No chaining.*
	10..	Command chaining.*
	11..	Data chaining.*
	..1.	Both command and data chaining.*
	...1.	Error routine in control.
	....1.	Device is to be repositioned.
	.... 1...	Cyclic redundancy check (CRC) needed (tape only).

Flag
Field

Bit

Meaning

.... .1..	Exceptional condition. If this bit is on after control has been returned from the error routine, the error is considered permanent.
.... ..1.	IOB unrelated flag (i.e., nonsequential).
.... ...1	RESTART.
.... ...0	START.

* Chained channel-program scheduling does not depend on these bits to perform its chaining.

2. ICBFLAG2

9 (9)

1...	Flag byte 2: Halt I/O has been issued.
.1..	Sense will not be performed until the device is free.
..1.	IOB has been purged.
...1	Home address (R0) record is to be read.
.... xxx.	I/O supervisor error correction flags.
.... ...1	QSAM error recovery routine is in control for a 2540 Card Punch with three buffers.

Input/Output Block (IOB)

(Mapped by IEZIOB; pointed to by DCBIOBA, offset X'44' in DCB)

The IOB is the communication medium between a routine that requests an I/O operation and the I/O supervisor. All the information required by the I/O supervisor to execute an I/O operation is contained in the IOB, or is pointed to by the IOB.

The IOB format falls into three segments whose use varies mainly by access method:

Prefix

- QSAM, BSAM, BPAM chained scheduling
- QSAM, BSAM, BPAM normal scheduling
- BDAM
- GAM, QISAM

Standard Fields (all access methods)

Extension

- Direct access storage devices
- BTAM
- BISAM
- GAM
- QISAM
- BDAM
- VSAM
- VTAM
- 3540 Diskette I/O Unit Access Method

QSAM, BSAM, BPAM Chained Scheduling Prefix

-16 (-10) IOBCFLG1 I/O indicators (see note 1)	-15 (-F) IOBRV05 reserved	-14 (-E) IOBCINOP - off- set to last I/O instruction for input in ICB	-13 (-D) IOBCONOP - off- set to last I/O instruction for output in ICB
-12 (-C) IOBCECB - ECB used by BSAM or QSAM			
-8 (-8) IOBCICB - address of first ICB on the ICB queue			
-4 (-4) IOBCNOPA - address of the NOP command at the end of the queue			
-1 (-1)			

QSAM, BSAM, BPAM Normal Scheduling Prefix

-8 (-8) IOBNFLG1 flag byte (see note 2)	IOBNIOBA IOBNIOBB - address of next IOB prefix associated with one particular DCB; the IOBs are chained sequentially
-4 (-4) IOBNECB - ECB used by QSAM to indicate the status of an I/O event	
-1 (-1)	

BDAM Prefix

-8 (-8) IOBDEQIN dequeue loop indicator (see note 3)	IOBDQADA	IOBDQADB - address of the other IOB referred to in IOBDEQ (offset X'-8')
-4 (-4)	IOBSWAP - address of the segment work area used by this IOB to read or write a record of a format VS data set	
		-1 (-1)

GAM, QISAM Prefix

-4 (-4)	IOBGQECB - GAM: ECB that is within the first IOB only - QISAM: ECB used to indicate status of an I/O event	-1 (-1)
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Notes:

Flag Field	Bit	Mask Name	Meaning
1. IOBCFLG1 -16 (-10) 1...	IOBPTST	I/O indicators: NOTE or POINT operation is in progress.
	.... .1..	IOBABAPP	Error has been processed once by abnormal-end appendage routine.
	.... ..1.	IOBRSTCH	Restart channel.
	.... ...1	IOBPCI	Program-controlled interruption has occurred.
	xxxx		Reserved bits.
2. IOBNFLG1 -8 (-8)	1...	IOBPRTOV	Flag byte: PRTOV has occurred.
	.1..	IOBWRITE	A WRITE operation is in progress.
	..1.	IOBREAD	A READ operation is in progress.
	.1.1	IOBUPDAT	The block is to be updated if the OPEN parameter is UPDAT.
	.... 1...	IOBBKSPC	IOB being used for backspace, control, or NOTE/POINT operation.
	.... .1..	IOBSPAN	QSAM locate mode, logical record interface, UPDATE processing of spanned records: The record currently being processed has more than one segment.
	.... ..1.	IOBUPERR	Update channel program has been split into two parts.
	.... ...1	IOBFIRST	This is the first IOB on the chain.
3. IOBDEQIN -8 (-8)	1...	IOBDEQ	Dequeue look indicator: This IOB is using a track that was dequeued by another IOB, which is now waiting to dequeue another track. The other IOB enqueued on two or more tracks in order to find space in which to write/add a spanned record. The other IOB remained enqueued until it either wrote the record or determined that there was enough contiguous free space on the tracks to contain the record. After the other IOB dequeued the current track, the dequeuing was interrupted by the need of this IOB for the current track. Reserved bits.
	.... xxxx		

Standard Section

0 (0) IOBFLAG1 flag byte (see note 1)	1 (1) IOBFLAG2 flag byte (see note 2)	2 (2) IOBSENS0 sense byte (see note 3)	3 (3) IOBSENS1 sense byte (device dependent)
4 (4) IOBECBCC completion code (appears in first byte of ECB)	IOBECBPT IOBECBPB - address of ECB (BSAM/BPAM: ECB is in DECB QSAM: ECB is in QSAM IOB Prefix)		
8 (8) IOBFLAG3 I/O supervisor flags	9 (9)	IOBCSW - low-order seven bytes of last CSW that reflects the status for this request	
or			
8 (8) IOBFL3 3890 or 3800 status byte (see note 4)	9 (9)	15 (F) IOBIOCSW - command address and status bytes from CSW (3890), composed of IOBCMDA - command address (3 bytes) and IOBSTBYT - status bits 32 - 47 (2 bytes)	
		last two bytes of IOBCSW	
16 (10) IOBSIOCC - bits 2 & 3 contain condition code from SIO for event	IOBSTART IOBSTRTB - address of channel program to be executed		
20 (14) IOBFLAG 4 (see note 5)	IOBDCBPT IOBDCBPB - address of DCB associated with this IOB		
24 (18) IOBREPOS repositioning command (see note 6)	IOBRESTR IOBRSTRB - (see note 7)		
28 (1C) IOBINCAM/IOBBTAMF - (see note 8) IOBFL4/IOBCRDCC/IOBCRILC	30 (1E)		IOBERRCT - number of temp. errors during retry
			31 (1F)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. IOBFLAG1 0 (0)	1... .. .1.. ..	IOBDATCH IOBCMDCH	Flag byte 1: Data chaining used in channel program. Command chaining used in channel program.
	..1. .... ...1	IOBERRTN IOBRPSTN	Error routine is in control. Device is to be repositioned.
	.... 1...	IOBCYCCK IOBFCREX	Tape: Cyclic redundancy check needed. DASD: FETCH command retry exit.
	.... .1..	IOBIOERR	Exceptional condition. After the error routine returns and this bit is on, the error is considered permanent.

Notes:

Flag Field	Bit	Mask Name	Meaning
	....1.	IOBUNREL	IOB unrelated flag (non-sequential).
	....1	IOBRSTR	RESTART address in IOB to be used.
	....0		START.
2. IOBFLAG2 1 (1)	1... ..	IOBHALT	Flag byte 2: HALT I/O has been issued by SVC purge routine.
	.1... ..	IOBSENSE	Sense will not be performed until the device is free.
	.1... ..	IOBPURGE	IOB has been purged to allow I/O activity to quiesce.
	...1... ..	IOBRDHA0	Home address (RD) record is to be read. Seek command not needed.
	...1... ..	IOBALTR	No test for out-of-extent. An alternate track is in use.
	....1..	IOBSKUPD	Seek address is being updated. Cylinder end or file mask violation has occurred.
	....1.	IOBSTATO	Device end status has been ORed with channel end status (graphics devices).
	....1	IOBPNCH	QSAM: Error recovery in control for a 2540 Card Punch with three buffers. BTAM: RESETPL macro instruction was used.
3. IOBSENS0 2 (2)	....1	IOBSNSC9	First sense byte (device dependent): Channel 9 sensed in carriage tape. Device dependent bits.
4. IOBFL3 4 (4)	1... ..	IOBCCC	Status error counts for 3890 Magnetic Character Reader: Channel control check error count.
	.1... ..	IOBICC	Interface control check error count.
	.1... ..	IOBCDC	Channel data check error.
	...1... ..	IOBACU	Attention/control unit error.
	...1... ..	IOBCNC	Chain check error.
	....1..	IOBMSG	Message flag.
	....1.	IOBICL	Incorrect length error.
	....1	IOBLOG	Logout flag.
	....1... ..	IOBSDR	3800 status bits: Statistics-only flag.
	....1..	IOBMSG	Message flag.
	....1.	IOBJAM	JES has detected a paper jam; 3800 will suppress its "intervention required" message.
	....1	IOBLOG	Logout flag.
	xxxx ..		Reserved bits.
5. IOBFLAG4 20 (14)	1... ..	IOBGDPOL	Reenter SIO appendage (OLTEP guaranteed device path).
	.1... ..	IOBPMERR	VTAM should be posted with a permanent I/O error because all alternate paths to the 3705 Type III Channel Adapter have been tried.
6. IOBREPOS 24 (18)	During magnetic tape I/O error correction (meaningful only if bit 3 in IOBFLAG1 is on): The control command (BSR, FSR, ERG) is required to reposition over a block.		
7. IOBRSTRB 25 (19)	After SVC 16 (PURGE) - quiesce: Address of the next IOB in the purge chain. (For last IOB in chain, byte 4=X'FF'.)		
	During I/O supervisor write-to-operator routine control: CCHH part of the address of a defective track.		
	Any device: Address of the channel program used to correct an error condition.		
	After I/O error correction: If a channel program is restarted through a CCW other than the one pointed to by the IOBSTART field, its address is here.		

Notes:

Flag Field	Bit	Mask Name	Meaning
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8. IOBINCAM QSAM, BSAM, EXCP:

28 (1C) 2 bytes			Normal scheduling: value used to increment block count field in DCB for magnetic tape. Chained scheduling: zeros.
			<u>QSAM, BSAM (printer and card punch):</u>

Operation code of write CCW, when an ANSI control character is present and no data is to be written

IOBBTAMF 28 (1C) 1 byte	1... ..	IOBPRMER	Flag byte for BTAM: SAD or ENABLE issued by OPEN resulted in a permanent I/O error.
	.1... ..	IOBINUSE	This IOB is currently being used by an I/O operation.
	.... ..1.	IOBRFTMG	A request-for-test message was received from a remote 3270 Display Station.
1	IOBOLTST	Line is under online test operation.
	..xx xx..		Reserved bits.

IOBRSV19 29 (1D) 1 byte			Reserved
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IOBFL4 28 (1C) 1 byte	1... ..	IOBOVR	Sense error counts for 3890 Magnetic Character Reader: Overrun error.
	.1... ..	IOBREJ	Command reject error.
	..1... ..	IOBDCK	Data check error.
	...1... ..	IOBBUS	Bus-out error.
	.... 1...	IOBEQP	Equipment check error.
	.... .1..	IOBENT	First time entry switch.
xx		Reserved bits.

IOBCRDCC 28 (1C) 1 byte			Data check error count (optical reader).
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IOBCRILC 29 (1D) 1 byte			Incorrect length error count (optical reader)
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Direct Access Extension

32 (20)

IOBSECK - a seek address used with a channel program
(MBBCCCHR)

39 (27)

BTAM Extension

32 (20)

IOBUCBX - UCB
index to locate
UCB address in
DEB

33 (21)

IOBWORK - work area used by error routines
and online terminal test routines

38 (26)

IOBRCVPT
received ACK-0
or ACK-1

39 (27)

IOBSNDPT
sent ACK-0 or
ACK-1

40 (28)

IOBERCCW - CCW area used by BTAM error recovery routines

47 (2F)

48 (30)

IOBERINF - error recovery field used by the BTAM error
recovery routines

63 (3F)

64 (40)

IOBCPA - channel programs area (length of field depends on
terminal and options)

71 (47)

BISAM Extension

40 (28)

IOBCCWAD - fixed-length records: address of first CCW of
channel program
variable-length records: address of buffer, if
dynamic buffering specified, after READ KU

44 (2C)

IOBINDCT
flag byte
(see note 1)

45 (2D)

IOBUNSQR
flag byte
(see note 2)

46 (2E)

IOBAPP
appendage code
(see note 3)

47 (2F)

IOBASYN
asynchronous
routine code
(see note 4)

48 (30)

IOBCOUNT
write check
counter

IOBFCHAD

IOBFCHNB - forward chain address

52 (34)

IOBBCHAD - backward chain address

55 (37)

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. IOBINDCT 44 (2C)	1... ..	IOBDEQCP	Flag byte: Dequeue channel program from queue.
	.1... ..	IOBUNSCH	Unscheduled queue.
	. .1... ..	IOBOVPTR	DCBMSWA (offset X'40' in DCB) points to overflow record key followed by data.
	. .0... ..		DECBAREA (offset X'C' in DECB) + 6 points to overflow record data.
	. . .1... ..	IOBKEYAD	DCBMSWA (offset X'40' in DCB) + 8 points to overflow record key.
	. . .0... ..		DECBKEY (offset X'14' in DECB) points to overflow record key.
	. . . .1... ..	IOBCHNNL	Abnormal channel end has occurred.
	. . . . .0... ..		Normal channel end has occurred.
	. . . . .xxx..		Reserved bits.
2. IOBUNSQR 45 (2D)	1... ..	IOBCPBSY	Reason for unscheduled queue: Channel program CP1 or CP2 is busy.
	.1... ..	IOBNTAV1	No CP4, CP5, or CP6 available.
	. .1... ..	IOBNTAV2	No CP7 available.
	. . .1... ..	IOBKNWR	WRITE KN is in effect (unscheduled IOB is for WRITE KN).
	. . . .1... ..	IOBKNRWR	WRITE KN is in effect (unscheduled IOB is for READ or WRITE KN).
	. . . . .xxx..		Reserved bits.
3. IOBAPP 46 (2E)			Appendage code:
			READ or WRITE K:
			Both normal and abnormal channel end conditions.
			<u>Code</u>
			0 Completion of CP4-5-5W for READ.
			1 Completion of CP4-5-5W for WRITE.
			2 Completion of CP 7 or 7W.
			3 Completion of CP1 or CP2.
			5 Completion of CP6 or 6W.
			6 Completion of CP5W for write check- ing after WRITE.
			WRITE KN:
			Both normal and abnormal channel end conditions.
			<u>Code</u>
			7 Completion of CP1 or CP2.
			8 Completion of CP8.
			9 Completion of CP10A for true insert.
			10 Completion of CP10B for true insert.
			11 Completion of CP10B for addition to end of data set.
			12 Completion of CP14 for set-ups 1, 2, and 5 (asynchronous routine codes 9, 10 and 13).
			13 Completion of CP14, for set-ups 3, 4, and 6 (asynchronous routine codes 11, 12, and 14).
			14 Completion of CP15.
			15 Completion of CP16 for set-up 2 (search overflow chain for last over- flow record in the chain: addition to end of data set).
			16 Completion of CP16 for set-up 3 (search overflow chain for record which logically precedes or is equal to new record to be added: true insertion).

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>
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Meaning

- 17 Completion of CP17 when to be used for track index only.
- 18 Completion of CP17 when used for track index and when its use is to be continued for higher level indices.
- 19 Completion of CP17 when its use is to be started or continued for higher level indices.
- 20 Completion of CP9A, CP11A, CP12A, or CP13A.
- 21 Completion of CP9B, CP11B, CP12B, or CP13B.
- 22 Completion of CP9C or CP123W.
- 23 Completion of CP10A for addition to end of data set.
- 24 Completion of CP12C or CP13C.

4. IOBASYN
47 (2F)

Asynchronous routine code.

READ or WRITE K:

The following codes direct control to the proper asynchronous routine for a READ or WRITE K operation.

Code

- 0 Successful completion of CP4-5-6.
- 1 Do an EXCP.
- 2 Successful completion of CP7.
- 3 Successful completion of CP1 or CP2.
- 4 Unsuccessful completion of CP4-5-6.
- 6 Unsuccessful completion of CP7.
- 7 Unsuccessful completion of CP1 or CP2.

WRITE KN:

The following codes direct control to the proper asynchronous routine for a WRITE KN operation.

Code

- 1 Scheduled to do an EXCP which could not be done in an appendage routine because a different device (UCB) was involved.
- 8 Scheduled upon the successful or unsuccessful completion of a WRITE KN macro.
- 9 Scheduled to set up and execute CP14 when a record is bumped from a prime data track as a result of a new record being placed on that track (setup 1).
- 10 Scheduled to set up and execute CP14 when a new record is to be added to the end of the data set, the last track is full, and no overflow chain currently exists for the last track (setup 2).
- 11 Scheduled to set up and execute CP14 when a new record is to be added to the end of the data set, the last track is full, but an overflow chain does already exist for the last track (setup 3).
- 12 Scheduled to set up and execute CP14 when a new record is a true insert and it is to go in the middle of an overflow chain (setup 4).

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
			13 Scheduled to set up and execute CP14 when a new record is a true insert and it is to become the first record in an already existing overflow chain (setup 5).
			14 Scheduled to set up and execute CP14 when a new record is a true insert and it has a key equal to that of the key of a record in the overflow chain, which record is marked for deletion. The new record simply replaces the deleted record (setup 6).

GAM Extension

32 (20) IOBCBXG UCB index	33 (21) IOBRV37 - reserved
36 (24) IOBSTATA X'80' = IOB is not available	IOBNXTPT IOBNXTPB - address of next available IOB (set to zero if last IOB)
40 (28) IOBCCW - list of channel command words to transfer data	
71 (47)	

QISAM Extension

40 (28)
W1IEXTEN/W1OEXTEN - appendage
codes for
channel end
(see note 5)

Note:

5. W1IEXTEN/
W1OEXTEN
40 (28)

Appendage codes for both normal and
abnormal channel end conditions:

<u>Code</u>	<u>Meaning</u>
0	READ operation was completed.
4	SETL (K or I) operation was completed.
8	WRITE operation was completed.
12	CHECK operation was completed.
16	REWRITE operation was completed.
20	RECHECK operation was completed.

BDAM Extension

40 (28) IOBDBYTR - no. of unused bytes remaining on the track	42 (2A) IOBDIOBS - overall size of IOB
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44 (2C) IOBDAYLI X'00' = this IOB available	IOBDPLAD IOBDPLB - address of next IOB in pool of IOBs		
48 (30) IOBDTYPE type of request (see note 6)	49 (31) IOBDTYP2 type of request (see note 7)	50 (32) IOBSTAT1 flag byte (see note 8)	IOBDSTAT IOBSTAT2 - error code for abnormal completion (POST code in ECB)
52 (34) IOBDPCND - address of location where channel-end program should end			
56 (38) IOBDBYTN - number of bytes needed on a track to write a new block		58 (3A) IOBRVS34 - reserved	
60 (3C) IOBDQPTR - address of IOB for next I/O operation to be executed			
64 (40) IOBRVS35 - reserved			
			71 (47)
72 (48) IOBDNCRF - count field for new block			
			79 (4F)
80 (50) IOBCHNPR - channel program used to transfer data starts here (requested by READ or WRITE)			
			87 (57)

Notes:

Flag Field	Bit	Mask Name	Meaning
6. IOBDTYPE 48 (30)	1... ..	IOBVERIFY	Type of request and specified options: Verify.
	.1.. ..	IOBOVFLO	Overflow.
	..1.	IOBEXTSC	Extended search.
	...1	IOBFDBCK	Feedback.
	.... 1...	IOBACTAD	Actual addressing.
	.... .1..	IOBDYNBF	Dynamic buffering.
	.... ..1.	IOBRDEXC	Read exclusive.
	.... ...1	IOBRELBL	Relative block addressing.
7. IOBDTYP2 49 (31)	1... ..	IOBSKEY	Type of request and specified options: Key address coded as "S".
	.1..	IOBSBLKL	Block length coded as "S".
	..11	IOBSUFFX	RU is suffixed to the type, indicating that the feedback address in DECNXADR (offset X'15' in DECB) can be the address of either the next data record or the next capacity record, whichever occurs first.
	...01		R is suffixed to the type, indicating that the feedback address in DECNXADR (offset X'15' in DECB) is the address of the next data record.

Notes:

Flag Field	Bit	Mask Name	Meaning
	.... 1...	IOBRQUEST	READ request.
	.... 0...		WRITE request.
	.... .1..	IOBTYPE	Key type.
	.... .0..		ID type.
	.... .1.	IOBADDTY	Add type.
	.... ...1	IOBRELEX	RELEX macro issued.
8. IOBSTATI			
50 (32)	1... ..	IOBABNRM	Flag byte: Abnormal completion.
	.1... ..	IOBNEWVL	On extended search, the next extent is on a new volume. The ASI routine must issue the EXCP macro; the end-of-extent appendage cannot issue it.
	..1.	IOBSYNCH	Module was entered via SYNCH.
	..1	IOBPASS2	On extended search, indicates to the relative block conversion routine that the second pass of a two-pass conversion routine has completed.
	.... 1...	IOBENQUE	For exclusive control request, indicates that a record has been enqueued.
	.... .1..	IOBBUFF	A buffer has been assigned to this IOB.
	.... .1.	IOBADDVU	IOB being used to add a variable or undefined length record to the data set.
	.... ...1	IOBSIORT	Indicates to the dynamic buffering routine that it was entered from, and is to return to, the START I/O appendage module.

VSAM Extension

40 (28)	IOBSEEK2 - IOB seek field 2	47 (2F)
48 (30)	IOBBUFC - address of associated buffer control block	
52 (34)	IOBREADA - address of first read channel program segment that has not been processed	
56 (38)	IOBNEXTA - address of next active IOB	
60 (3C)	IOBRDCHP - address of read channel program	63 (3F)

VTAM Extension

32 (20) IOBUCBXV - UCB index, or IOBRTYPE - OBR record type	IOBERCT IOBERCTA - address of counters for SIO and temporary errors
36 (24) IOBNAMSZ size of terminal name	IOBNAME IOBNAMEA - address of terminal name
40 (28) IOBMDREC - address of record being passed to miscellaneous data recorder	
44 (2C) IOBRCD - address of queue of OBR records passed from 3705	
48 (30) IOBSENSV sense byte save area	49 (31) IOBCSWSV - save area for last 7 bytes of CSW
55 (37)	

3540 Diskette I/O Unit Extension

32 (20) IOBSKRV reserved	IOBSKADR - 3540 seek address	IOBSKTT track number	IOBSK0 - must be zero	IOBSKSS sector number
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Interrupt Queue Element (IQE)

0 (0) Reserved	IQELNK - address of next IQE on IQE queue
4 (4)	IQEPARAM - parameter to be passed to the asynchronous exit routine
8 (8) Reserved	IQEIRB - address of IRB to be scheduled because of this request
12 (C) Reserved	IQETCB - address of TCB with which this request is associated

15 (F)

Job File Control Block (JFCB)

(Mapped by IEFJFCBN LIST=YES)

A JFCB is constructed for each ddname specified in a job step. It is written on auxiliary storage by job management routines. The JFCB is brought into virtual storage when a DCB with the corresponding ddname is opened. Information in a JFCB may be modified during OPEN.

0 (0) JFCBDSNM - data set name, or JFCBQNAM - process queue name specified by QNAME, (8 bytes), followed by reserved (36 bytes) TCAM only			43 (2B)		
44 (2C) JFCBELNM - type of area for IS data set, or member name or relative generation number, or JFCIPLTX - module name of network control program (TCAM)			51 (33)		
52 (34) JFCBTSDM - job mgt/data mgt inter- face (see note 1)	53 (35) JFCBDSCB - TTR address of format 1 DSCB on first volume of the data set				
56 (38) JFCFCBID - forms control buffer image identification (3211), - data protection image identification (3525 with read and print), or - format record ID (3886) ----- or -----					
56 (38) JFCBFRID - FRID specified as subparameter of the DCB specified in the DD statement ----- or -----					
56 (38) JFCAMCRO - VSAM checkpoint/ restart options			58 (3A) JFCAMSTR - number of strings		
60 (3C) JFCBADBF - number of data buffers			62 (3E) JFCNLREC - logical record length (VSAM)		
64 (40) JFCVINDX - Mass Storage Volume Control volume selection index (MSS)			66 (42) JFCBLTYP label type (see note 2)	67 (43) JFCBOTTR/ JFCBUFOF (see note 3)	
68 (44) JFCFUNC - 3525 functions (see note 4) or JFCBFLSQ - continuation of JFCBOTTR/file seq. no.			70 (46) JFCBVLSQ - volume sequence number		
72 (48) JFCBMASK - data management mask (see note 5)					
79 (4F)					

80 (50) JFCBCRDT - data set creation date (ydd)		83 (53) JFCBXPDT - data set expiration date (ydd)	
JFCBXPDT continued		86 (56) JFCBIND1 indicator byte (see note 6)	87 (57) JFCBIND2 indicator byte (see note 7)
88 (58) JFCAMPTR - address of AMPBLK for additional VSAM parameters			
----- or -----			
88 (58) JFCBUFRQ/ JFCBUFNO - no. bufs for line/data set	89 (59) JFCBGNCP/ JFCBFALN/ JFCBFTEK (see note 8)	90 (5A) JFCBUFL - buffer length	
92 (5C) JFCEROPT error options (see note 9)	93 (5D) device character- istics (see note 10)	94 (5E) JFCDEN - tape density (see note 11)	95 (5F) JFCLIMCT - BDAM search limit
96 (60) BDAM: continued		98 (62) JFCDSORG - data set organization (see note 12)	
JFCTRKBL - previous track balance for MOD data set			
100 (64) JFCRECFM record format (see note 13)	101 (65) JFCOPTCD option codes (see note 14)	102 (66) JFCBLKSI - max blocksize, or JFCBAXBF - number of index buffers JFCBUFSI - maximum buffer size	
104 (68) JFCAMSYN - module name of VSAM SYNAD routine			
----- or -----			
104 (68) JFCLRECL - logical record length		106 (6A) JFCNCP/JFCBUFMX (see note 15)	111 (6F) JFCNTM/JFCPCI/ JFCBFSEQ (see note 16)

Normal 108 Segment

108 (6C) JFCRKP - relative position of key within logical record		110 (6E) JFCCYLOF - no. of tracks for cylinder overflow (max = 99)	111 (6F) JFCDBUFN reserved
112 (70) JFCINTVL - not supported by OS/VS1			

108 Printer Segment

108 (6C) JFCUCSID - name of UCS image to be loaded		
112 (70) JFCUCSOP - UCS image operation (see note 17)		
113 (71) JFCOUTLI - SMF output limit		
116 (74) JFCBNTCS number of overflow tracks	117 (75) JFCBNVOL number of volume serial numbers	118 (76) JFCBVOLS - first five volume serial numbers
139 (8B)		
140 (8C) JFCMSVGP - mass storage volume group from which to select a volume		
147 (93)		
148 (94) JFCBEXTL - length of block of extra vol ser nos. (> 5)	149 (95) JFCBEXAD - relative track address (TTR) of first JFCB extension	
152 (98) JFCBPQTY - primary quantity of direct access storage required, or JFCRUNIT - RD, PR, or PU, followed by 1 - 9; unit type of remote device	155 (9B) JFCBCTRI space parameters (see note 18)	
156 (9C) JFCBSQTY - secondary quantity of direct access storage required	159 (9F) JFCFLGS1 - flag byte (see note 19)	
or		
156 (9C) JFCRQID - QID used by VSAM to deter- mine remote terminal used for this job	158 (9E) JFCBIND3 reserved	
160 (A0) JFCBDQTY - quantity of direct access storage required for a directory or imbedded index area		163 (A3) JFCBSPNM - split cylinder address of JFCB
JFCBSPNM continued		166 (A6) JFCBABST - relative address of first track to be allocated

168 (A8) JFCBSBNM - address of JFCB from which space is to be allocated	171 (AB) JFCBDRH average data block length
JFCBDRH continued	174 (AE) JFCBVLCT volume count
	175 (AF) JFCBSPTN (see note 20)

JFCB EXTENSION BLOCK
(mapped by IEFJFCBX LIST=YES)

0 (0) JFCBXTTR - direct access address for next extension block	3 (3) reserved
4 (4) JFCBXVOL - 15 volume serial numbers	
93 (5D)	94 (5E) reserved
171 (AB)	
172 (AC) JFCBXNXT - address of next JFCB extension	
	175 (AF)

JFCB Extension for 3800 Printing Subsystem
(Mapped by IEFJFCBE)

0 (0) JFCBEXTR - direct access address for next extension block			3 (3) JFCBE001 - reserved
4 (4) JFCBFLAG - flag byte (see note 21)	5 (5) JFCIDTRC - table ref. char. (copy modification)	6 (6) JFCBE008 - reserved	7 (7) JFCIMTOT - no. of image copies
8 (8) JFCBMAGT - forms image cartridge ID			
12 (C) JFCMODIF - copy modification ID			
16 (10) Reserved			
20 (14) JFCBTRS1 - name of translate table 1			
24 (18) JFCBTRS2 - name of translate table 2			
28 (1C) JFCBTRS3 - name of translate table 3			
32 (20) JFCBTRS4 - name of translate table 4			
36 (24) JFCGROUP - number of times each page is printed before going to next page (one byte for each group)			
number for group one	number for group two	number for group three	number for group four
number for group five	number for group six	number for group seven	number for group eight
44 (2C) JFCBE010 - reserved			
175 (AF)			

Notes:

Flag Field	Bit	Mask Name	Meaning
1. JFCBTSDM 52 (34)	1... .... .1.. .... ..1. .... ...1	JFCCAT JFCVSL JFCSDS JFCTTR	Job management/data management interface: Data set is cataloged. Volume serial list has been changed. SYSIN or SYSOUT data set. Use JFCBOTTR (X'43') instead of DS1LSTAR to reposition data set if automatic step restart occurs.
	.... 1...	JFCNWRIT	Do not write back the JFCB during OPEN processing.
	.... .1..	JFCNDSCB	Do not merge DSCB or label fields into this JFCB.
	.... ..1.	JFCNDCB	Do not merge DCB fields into this JFCB.
	.... ...1	JFCPAT	The patterning DSCB is complete.
2. JFCBLTYP 66 (42)	.1.. .... ..1.	<u>Code</u> AL LTM	Label type: ANSI label. Unlabeled tape created by DOS may have leading tape mark. OPEN/CLOSE/EOV and restart are to space over tape mark if it exists.
	...1	BLP	Bypass label processing.
	.... 1.1.	SUL	User label.
	.... .1..	NSL	Nonstandard label.
	.... ..1.	SR	Standard label.
	.... ...1	NL	No label.
	x...		Reserved bit.
3. JFCBOTTR 67 (43)			DASD, MOD data set: If automatic step restart was requested, this field represents the TTR of the end-of-data indicator existing when the data set was first opened during the original execution of the current step.
JFCBUFOF 67 (43)			Tape data set: This field contains the buffer offset (DCB subparameter value). If the high-order bit is on, the offset equals four and the buffer offset field of each block (D-format records) contains the block length. If the high-order bit is off, the offset is as specified in the remaining seven bits. The buffer offset field of each block does not contain the block length.
4. JFCFUNC 68 (44)	1... .... .1.. .... ..1. .... ...1 1... .... .1..	JFCFNCCI JFCFNCCI JFCFNCCI JFCFNCCI JFCFNCCI JFCFNCCI	3525 Card Punch function (specified by FUNC): I - Interpret (punch and print two lines). R - Read. P - Punch. W - Print. D - Data protection. X - Data set is to be printed. This may be coded with PW or RPW to distinguish the data set to be printed from the data set to be punched.
	.... ..1.	JFCFNCCI	T - Two-line print support request. The second print line is located on card line three.
	.... ...x		Reserved bit.
5. JFCBMASK			Data management mask:
Bytes 0-4 72 (48)			Reserved for OPEN.
Byte 5 77 (4D)	1... .... .1.. .... ..1.	JFCSTAND JFCSLCRE JFCSLDES	Volume label processing required. Standard labeled tape required. Nonstandard labeled or unlabeled tape required - overwrite SL.
	...1	JFCDUAL	Label conflict - dual density check required.
	.... xxxx.... ...1	JFCOPEN JFCBPWPB	OPEN routine internal switches. Bypass password.

Byte 6 78 (4E)	1... ..	JFCINOP	Treat the INOUT option of OPEN as INPUT.
	.1.. ..	JFCOUTOP	Treat the OUTIN option of OPEN as OUTPUT.
	..1.	JFCDEFER	Set only for a data set descriptor record (DSDR) by the checkpoint routine. It indicates that the data set related to the JFCB is being processed sequentially, at the checkpoint, on a volume other than the volume on which processing began in the current step. When restart occurs, the bit causes deferred volume mounting.
	..1.	JFCNRPS	Set by OPEN to indicate that data set resides on a non-RPS device. Reset to zero when OPEN processing complete.
	...1	JFCMODNW	Disposition changed from MOD to NEW. Disposition (in JFCBIND2) will be restored to MOD after OPEN.
Byte 7 79 (4F) 6. JFCBIND1 86 (56)	.... 1...	JFCSDRPS	Search direct for RPS devices.
	.... .1..	JFCTRACE	GTF trace during OPEN/CLOSE/EOV processing.
	.... ..1.	JFCBUFF	<u>Before OPEN:</u> JFCBUFOF, at offset X'43', contains a buffer offset or invalid information resulting from a JFCB-to-JFCB merge.
	.... ..0.		<u>After OPEN:</u> OPEN may have stored a TTR in JFCBOTTR at offset X'43'.
	.... ...1	JFCRCTLG	OPEN has updated the TTR. The scheduler will update the TTR in the catalog if this data set is cataloged.
		JFCBOPS2	OPEN routine internal switches.
	11..	JFCRLSE	Indicator byte 1: Release external storage.
7. JFCBIND2 87 (57)	..11	JFCLOC	Data set has been located.
	.... 11..	JFCADDED	New volume has been added to the data set.
	.... ..1.	JFCGDG	Data set is a member of a generation data group.
	.... ...1	JFCPDS	Data set is a member of a partitioned data set.
	01..	JFCOLD	Indicator byte 2: OLD data set.
	10..	JFCMOD	MOD data set.
	11..	JFCNEW	NEW data set.
	..11	JFCBRWPW	Password required to write but not to read.
	..01	JFCSECUR	Password required to read or write.
	.... 1...	JFCSHARE	Shared.
8. JFCBGNCP, or JFCBFTEK, or JFCBFALN 89 (59)	.... .1..	JFCENT	Delete this JFCB before allocation for a restarted generation data group.
	.... ..1.	JFCREQ	Storage volume requested.
	.... ...1	JFCTEMP	Temporary data set.
			Number of IOBs constructed by OPEN - maximum 99 (GAM).
	x... ..x..	<u>Code</u>	Hierarchy support (not supported by VS1).
	..xxx		Buffering technique:
	..1..	S	Simple buffering.
	..11.	A	Logical record interface for BSAM locate mode.
	..1.	R	VS format BDAM data set is to be processed.
	...1	E	Exchange buffering.
	.... xx..		Reserved bits.
	.... ..xx		Buffer alignment:
	.... ..10	D	Doubleword boundary.
	.... ..01	F	Fullword boundary.

9. JFCEROPT
92 (5C)

1...	....	JFCACC
.1..	....	JFCSKP
..1.	....	JFCABN
...1	....	JFCTOPT
....	xxxx	

Disposition of permanent errors if user returns from a synchronous error exit. (QSAM)
Accept.
Skip.
Abnormal end of task.
Online terminal test (BTAM).
Reserved bits.

10. Device characteristics field - content depends upon the device in use.

		<u>Code</u>	<u>Magnetic Tape</u>
JFCTRTCH			Tape recording technique for 7-track tape:
93 (5D)	0010 0011	E	Even parity.
	0011 1011	T	BCD/EBCDIC translation.
	0001 0011	C	Data conversion.
	0010 1011	ET	Even parity and translation.

			<u>Direct Access Storage</u>
JFCKEYLE			Direct access key length.
93 (5D)			

			<u>Card Reader, Card Punch</u>
JFCMODE			Mode of operation:
93 (5D)	1000	C	Column binary mode.
	0100	E	EBCDIC mode.
	0010	O	Optical mark read (3505 only).
	0001	R	Read column eliminate (3505 and 3525 with read feature).

			Stacker selection:
JFCSTACK			Stacker 2.
93 (5D)	.... 0010	2	
	.... 0001	1	Stacker 1.

			<u>Printer</u>
JFCPRTSP			Normal printer spacing:
93 (5D)	0000 0001	0	No spacing.
	0000 1001	1	Space one line.
	0001 0001	2	Space two lines.
	0001 1001	3	Space three lines.

			<u>Paper Tape</u>
JFCCODE			Conversion code:
93 (5D)	1000 0000	N	No conversion.
	0100 0000	I	IBM BCD.
	0010 0000	F	Friden.
	0001 0000	B	Burroughs.
	0000 1000	C	National Cash Register.
	0000 0100	A	ASCII (8-track).
	0000 0010	T	Teletype.

11. JFCDEN
94 (5E)

		<u>Code</u>	<u>Tape density:</u>	
			<u>7-track</u>	<u>9-track</u>
	0000 0011	0	200 bpi	-
	0100 0011	1	556 bpi	-
	1000 0011	2	800 bpi	800 bpi
	1100 0011	3	-	1600 bpi
	1101 0011		-	6250 bpi

12. JFCDSORG
Byte 1
98 (62)

			<u>Data set organization:</u>
1...	....	IS	Indexed sequential.
.1..	....	PS	Physical sequential.
..1.	....	DA	Direct access.
...1	....	CX	BTAM or QTAM line group.
.... 1...	....	CQ	QTAM direct access message queue.
.... .1..	....	MQ	QTAM problem program message queue.
.... .1.	....	PO	Partitioned.
.... ....	....	U	Unmovable - data contains location-dependent information.

			<u>Graphics.</u>
Byte 2	1...	GS	TCAM line group.
99 (63)	.1..	TX	TCAM message queue.
	..1.	TQ	VSAM.
	.... 1...	AM	TCAM 3705.
	.... .1..	TR	Reserved bits.
	...x ...x		

13. JFCRECFM
100 (64)

10..	F
01..	V
11..	U
001.	D
..1.	T
...1	B
.... 1...	S
.... .10.	A
.... .01.	M
.... .00.	
.... ...0	

Record format:

Fixed.
Variable.
Undefined.
Variable (ASCII).
Track overflow.
Blocked (may not occur with under-
fined).
Fixed: standard blocks - no truncated blocks or unfilled tracks are embedded in the data set.
Variable: spanned records.
ANSI control character.
Machine code control character.
No control character.
Always zero.

14. JFCOPTCD
101 (65)

1...	W
.1..	U
..1.	C
...1	
.... .1..	Z
.... ...1	J
.... x.x.	
1...	W
.1..	M
..1.	I
...1	Y
.... .1..	L
.... ...1	R
.... x.x.	
1...	W
.1..	
..1.	E
...1	F
.... 1...	A
.... ...1	R
.... xx.	
.... 1...	
xxxx .xxx	
1...	
.1..	
..1.	
...x xxxx	

Option codes:

QSAM, BSAM, BPAM

Write validity check.
1403 Printer with UCS feature:
Allow a data check caused by an invalid character.
Chained scheduling using the program controlled interruption.
Bypass embedded DOS checkpoint records on tape.
Magnetic tape: Use reduced error recovery procedure (EXCP only).
DASD: Use search direct instead of search previous.
3800 Printing Subsystem table reference character present.
Reserved bits.

BISAM, QISAM

Write validity check.
Master indexes.
Independent overflow area.
Cylinder overflow area.
Delete option.
Reorganization criteria.
Reserved bits.

BDAM

Write validity check.
Track overflow.
Extended search.
Feedback.
Actual addressing.
Relative block addressing.
Reserved bits.

ASCII Records

EBCDIC to ASCII or ASCII to EBCDIC translation required.
Reserved bits.

TCAM

Source or destination name precedes message (after control byte).
Work unit is a message.
Control byte precedes work unit.
Reserved bits.

15. JFCNCP
106 (6A)

Number of channel programs, number of read or write requests that can be issued before a CHECK, or number of IOBs generated (maximum 99). GAM uses JFCBFTEK (offset X'59') for this information and does not use JFCNCP at all.

JFCBUFMX
106 (6A)

Maximum number of buffers to be used for data transfer for each line in this line group (TCAM).

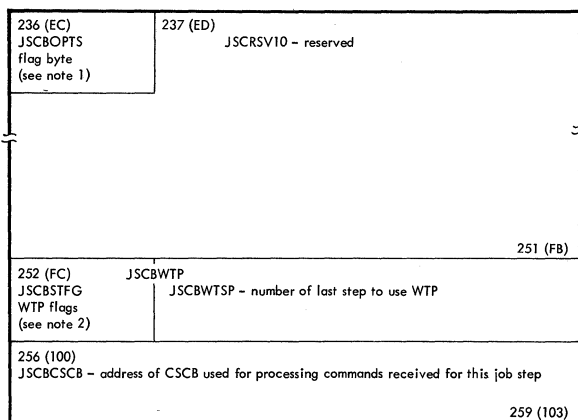
16. JFCPCI 107 (6B)		Program-controlled interruption handling: <u>Code PCI=</u>
	1... ..	(X,)
	.1... ..	(,X)
	..1.	(A,)
	...1	(,A)
	.... 1...	(N,)
	.... .1..	(,N)
	.... ..1.	(R,)
	.... ...1	(,R)
JFCNTM 107 (6B)	Number of tracks that determines the development of a master index (maximum 99).	
JFCBFSEQ 107 (6B)	Tape positioning information for checkpoint/restart. Checkpoint uses this field to pass a physical file sequence count to restart routines. The count tells the physical position of the tape volume that was being processed when the checkpoint was taken.	
17. JFCUCSOP 112 (70)		Operation of the UCS image to be loaded:
	1... .. JFCBEXTP	JFCB extension for 3800 Printing Subsystem present.
	.1... .. JFCFOLD	UCS image is to be loaded in FOLD mode.
	...1 JFCVER	UCS image is to be verified.
	.... 1... JFCFCBAL	FCB align.
	.... .1.. JFCFCBVR	FCB verify.
	..x. ..xx	Reserved bits.
18. JFCBCTRI 155 (9B)		Space parameters:
	00.. JFCBABS	ABSTR request.
	01.. JFCBAVR	Average block length request.
	10.. JFCBTRK	TRK request.
	11.. JFCBCYL	CYL request.
	..1. JFCBMSGP	Mass storage volume request.
	.... 1... JFCCONTIG	CONTIG request.
	.... .1.. JFCMIXG	MIXG request.
	.... ..1. JFCALX	ALX request.
	.... ...1 JFCROUND	ROUND request.
	....x	Reserved bit.
19. JFCFLGSI 159 (9F)		Flag byte:
	1... JFCBDLET	Delete data set used when extend- ing the job queue or spool data sets.
	.1... JFCTOPEN	Tape data set has been opened.
	.... 1... JFCBCEOV	CHKPT=EOV specified for this data set.
	.... .1.. JFCVRDS	VIO data set.
	.... ...1 JFCBUAFF	Unit affinity specified for this data set.
	..xx ..x.	Reserved bits.
20. JFCBSPTN 175 (AF)		Number of tracks per cylinder to be used by this data set when split cylinder is indicated.
	x.xx JFCBLGTH	Length of JFCB.
	.x.. xxxx	Reserved bits.
21. JFCBFLAG 4(4)		3800 Printing Subsystem flags:
	1... JFCBEOPN	User open exit modified this block.
	.... .1.. JFCBCFS	Continuous form stacking.
	..xx x.xx	Reserved bits.

Job Step Control Block (JSCB)

(Mapped by IEZJSCB; pointed to by TCBJSCB (X'B4'))

The JSCB contains step related information that remains constant throughout the performance of all tasks required for the completion of the job step.

188 (BC)	JSCRSV01 - reserved
192 (C0) JSCRSV32 reserved	JSCHPCE JSCHPCEA - address of optional JES processor control element
196 (C4)	JSCBSHR - address of AMBL chain (VSAM)
200 (C8)	JSCBTCP - address of TIOT chaining element chain (VSAM)
204 (CC)	JSCBPCC - address of private catalog control block chain (VSAM)
208 (D0)	JSCBTCBP - address of initiator's TCB (VSAM)
212 (D4)	JSCBJJSC - address of JSCB of the initiator that attached this job step
216 (D8)	JSCBDBTB - address of the DEB table for this job
220 (DC)	JSCBID - job serial number
224 (E0) JSCRSV02 reserved	JSCBDCB JSCBDCBA - address of DCB for data set containing scheduler tables for this job
228 (E4) JSCBSTEP current step number	229 (E5) JSCRSV03 - reserved
232 (E8)	JSCBSECB - ECB for communication between supervisor and initiator



Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. JSCBOPTS 236 (EC)	..1.	JSCBLONG	Flag byte: The partition cannot be redefined because the job occupying it is defined as long-running. Checkpoint must scan SIOT. The step represented by this JSCB is authorized to perform restricted system functions (APF). Reserved bits.
	.... ..1.	JSCSIOTS
	.... ....1	JSCBAUTH
	xx.x xx..		
2. JSCBWTFG 252 (FC)	1...	JSCBIOFG	WTP flags: Previous WTP had an I/O error. Text breaking indicator, additional message text scanning required. Reserved bits:
	.1..	JSCBRET	
	..xx xxxx		

Master Scheduler Resident Data Area (MSRDA)

The MSRDA contains information about scheduler components.
It is assembled into the nucleus at sysgen time and is never deleted.

BASEA

0 (0)		
BACHN - address of CSCB (command scheduling chain)		
4 (4)		
BATRM - group queue pointer		
8 (8)		
BALAD - ECB for added chain element		
12 (C)		
BAIPL - ECB for IPL communications task		
16 (10)		
BAO - pointer to system SWADS UCB		
20 (14)		
BAPRC - address of SYS1.PROCLIB UCB		
24 (18)		
BACV/BACV1 - system restart indicator and AUTO=NOLIST address of IESESTLT (used only during initialization) (see note 1)		
28 (1C)		
BALOG - address of log control table		
32 (20) BARSW/BASFL job flags (see note 2)	33 (21) BATRST - no. of tracks in initiator stack	34 (22) BAICTR - interpreter counter
36 (24) BAPKES - mask of initiator protect keys		38 (26) BAMINPAR - minimum initiator partition
40 (28) BAMIPAR2 - max/min partition size	42 (2A) MSLOGST log status (see note 3)	43 (2B) BASPBYTE - X'80'= master scheduler initialization complete
44 (2C)		
BALOGEGB - log ECB		

48 (30)			
BADSO - origin of DSO control block chain			
52 (34) BAMONITR monitor flags (see note 4)	53 (35) BAMONTR2 reserved	54 (36) BABCMAx - maximum number of broadcast messages	
56 (38) BADUMPID dump ID for STAE in master	57 (39) BALCCNT logical channel count	58 (3A) BASP5 - reserved	
60 (3C) BAPNLO - low boundary partition space			
64 (40) BATAcnt - tape device count		66 (42) BADACnt - DASD device count	
68 (44) BASP8 - reserved for BASEB			
135 (87)			
136 (88) MSNTAL initialization byte (see note 5)	137 (89) MSSSB - SSS system exclusive byte 2 (see note 6)	138 (8A) MSPFG pending flags (see note 7)	139 (8B) MSECBFL ECB flags (see note 8)
140 (8C) MSSSA - SSS RES switches MSTUS - status byte (see note 9)	141 (8D) MSFHF - fetch flags (see note 10)	142 (8E) MSVRB - command verb	
		150 (96) MSPASS - variable communication field	

MSPASS continued

158 (9E)

MSERM - message generation
control

160 (A0)

MSPBP - P pointer, points to character before list

164 (A4)

MSECB - master ECB

168 (A8)

MSSJQ - address of ECB in SJQ entry of job using console

172 (AC)

MSBOBECB - ECB for use by allocation, UCB pointers

176 (B0)

MSUCBPR - primary UCB

180 (B4)

MSUCBAL - alternate UCB

184 (B8)

MSABL - pseudodisable switch

188 (BC)

MSSPARE

196 (C4)

MSSPARE2

203 (CB)

BASEB

(Overlays corresponding displacements in BASEA)

64 (40)

MSSUCBAL - UCB address list address

72 (48)			
MSSUCBX - first scheduled UCB extension			
76 (4C)			
MSSIRTCB - address of pointer to forced dispatch queue			
80 (50)			
MSCSCBLT - address of last CSCB			
84 (54)			
BASTCSCB - CSCB address for STAE			
88 (58)			
BAMTTRCB - mount TRCB chain pointer			
92 (5C)	94 (5E)	95 (5F)	
BASENFE - reserved	BADEFID - ID on console issuing command	BADEFSP - DEFINE in transient interface (see note 11)	
96 (60)			
BALCSBND - pageable nucleus low boundary			
100 (64)			
BAFTBBX - subpool 245 boundary box, consisting of: BAFTFQE - first FQE pointer (4 bytes) BAFTLO - fixed SQS low boundary (4 bytes) BAFTHL - fixed SQS high boundary (4 bytes)			
111 (6F)			
112 (70)			
BASRPND - system assigned TRCB pointer			
116 (74)	BASTPARM - command ID		
BASTCMID command ID	BASTDFKY DEFINE key save (VM/370)	BASTFLAG flag byte (see note 12)	BASTIND - work area indicator
120 (78)			
BASTAE - address of SVC 34 STAE exit			
124 (7C)			
BADEFINE - DEFINE control information (see note 13)			

128 (80)

BALOGON - LOGON command chain

132 (84)

BATECBP- ECB address for transient reader used by CRJE

188 (8C)

MSPPTCB - next-to-highest-priority problem program TCB

192 (C0)

MSTPTCB - highest-priority problem program TCB

196 (C4)

MSGTMAIN - address of gotten area (via GETMAIN) to be freed by STAE EXIT

200 (C8)

MSGTLGTH - Length and subpool of area to be freed by STAE EXIT

203 (C8)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. BACV1 24 (18)	1... .. .1.. .. ..xx xxxx	BACVCDST BACVNLST	Initialization flags: Cold start. No list in auto-IPL. Reserved bits.
2. BASFL 32 (20)	1... .. .1.. .. ..1. .... ...1 1... 1.. .... .1.. .... .1	BAIN BAJN BAINTSET BAVU BAHR BADSP BADOSET BADSET	Job flags: IPL. Jobnames. Indicates internal set for TOD. Vary/unload summary. Queue hold/release. Display A processing. TOD clock should not be set. Invalid SET command for TOD clock.
3. MSLOGST 42 (2A)	1... .. ..1. .... ..1. .... ...1 xxxx	MSLOGENQ MSLOGTHD MSLOGCOM MSLODAR	Log status: Log data set scheduled to be queued to SYSOUT writer. Log not supported. Communications task to stop issuing WTLs. Reentry of IEEOLOGWR from DAR (due to 80A ABEND). Reserved bits.
4. BAMONITR 52 (34)	1... .. .1.. .. ..1. .... ...1 1... .... .1.. .... .1.. .... .x	BAMJIN BAMDSN BAMSPACE BAMSTAT BAMSESST BAMSFSSC BAMACTIVE	Monitor flags (terminal: TJB chain; consoles: UCME chain). Jobnames for terminals. Dsames for terminals. Space for terminals. Status for terminals. Sessions for terminals. Sessions for consoles. Monitor active for consoles. Reserved bit.
5. MSNTAL 136 (88)	1... .. .1.. .. ..1. 1.. .... .1.. .... .1.... .x	MSNIP MSCURE34 MSQNIP MSPNIP	Initialization byte: IPL. SYSOUT IPL. SYSOUT job start. 34 security. Queue initialized. Procedure catalog initialized. Reserved bits.
6. MSSSB 137 (89)	1... .. .1.. .. ..1. .... ...1 1... .... .1.. .... .1.. .... .x	MSCONFLG MSCANFLG MSROLFLG MSSO MSSSDSN MSSSPACE MSTN	SSS system exclusive byte 2: Console flag. Cancel (for ABEND). Rollout. Spinoff (cancel). Display data set name. Display space. Value to turn on time value. Reserved bit.

7. MSPFG 138 (8A)	1... ..	MSDATE	Pending flags:
	.1. . . .	MSPNB	IPL date.
	.1. . . .	MSCMC	Partition busy.
	...1 . . .	MSICR	Command move completed.
	... 1..	MSSYN	Interpreter command return.
	... .1..	MSSYT	System input control purge request.
	... .1.	MSBSP	System output control purge request.
	.... ..1	MSCCS	Blank start pending (REQ=1; START BLANK=0).
			Console command suppressed.
8. MSECBL 139 (8B)	1... ..	MSEXT	ECB flags:
	.1. . . .	MSWTO	External interrupt.
	.1. . . .	MSWTL	Write to operator.
	...1 . . .	MSATTN	Write to log.
	... 1..	MSYSIN	Console attention.
	... .1..	MSYSOUT	System input.
	... .1.	MSMCR	System output.
	.... ..1	MSSUM	Master command routine.
			Summary bit; vary UCB scan required.
9. MSTUS 140 (8C)	1... ..	MSINLSW	Status flags:
	.1. . . .	MSSSIPL	Master initialization.
	.1. . . .	MSWRPEN	IPL.
	...1 . . .	MSNUPSW	WTO pending.
	... 1..	MSWRLOG	Console usage principle or alternate.
	... .1..	MSREOF	Log purge request.
	.... 1..	MSSRDR	Reader EOF.
	.... .1..	MSNRP	Start reader.
	.... .1.	MSNWP	New reader pending.
	.... ..1	MSYOUT	New writer pending.
		MSJNF	New writer pending (modify).
			Job notification (1=YES).
10. MSFHF 141 (8D)	1... ..	MSNMF	Fetch flags:
	.1. . . .	MSCSD	Named FETCH.
	..1. . . .	MSTTT	Current command execution sequence defer.
	...1 . . .	MSFAX	TCB tree trace fetch (locate).
	... 1..	MSREPLYB	Auxiliary fetch given.
	.... 1..	MSPSDT	Reply bit to request attention.
	.... .1.	MSDISPST	Pseudo-SYSOUT.
	.... ..1	MSQHR	Status notification.
			Queue hold/release.
11. BADEFSP 95 (5F)	1... ..	BASPOSCE	DEFINE in transient interface:
	... .1.	BASPDEFN	Partitions quiesced for DEFINE.
	...x xx.x		Definitions in progress.
			Reserved bits.
12. BASTFLAG 118 (76)	.... .1.	BACSCBCB	STAE status indicators:
	.... ..1	BASTFAIL	CSCB/CIB.
	.... 1..	BASTGTMN	STAE failure.
	xxxx x....		GETMAIN from PSQA by queue command.
			Reserved bits.
13. BADEFINE 124 (7C)	1... ..	BAON	DEFINE control information:
	0... ..		DEFINE operation.
	.1. . . .	BALIST	IPL.
	.1. . . .	BASTP	List requested.
	...1 . . .	BADYNDEF	Adjacent partition check.
	... 1..	BACHANGE	Dynamic definition allowed.
	.... 1..	BASPWT	IPL request to change partition.
	.... .1.	BADFCMD	Small partition cannot terminate because of DEFINE operation.
	.... ..1	BAPFK	A DEFINE command has been issued.
			Protection indicator.

Page Control Block (PCB)

(Mapped by IHAPCB; pointed to by TCBPCB, offset X'D4')

0 (0) PCBFLG1 flag byte (see note 1)	1 (1) PCBQ1 - forward queue address
4 (4) PCBFLG2 flag byte (see note 2)	5 (5) PCBQ2 - backward queue address
8 (8) PCBTCB - address of the TCB	
12 (C) PCBREG - address of register save area	
12 (C) PCBTCBF - save area for TCBFLGS + 1 (offset X'1E')	13 (D) PCBSVCN - save area for SVC number
	14 (E) PCBSVCL - save area for SVC length
	15 (F) reserved
16 (10) PCBENF1 entry flag byte (see note 3)	17 (11) PCBENBG - begin address, or address of first list entry
20 (14) PCBENF2 entry flag byte (see note 4)	PCBENA2 PCBENED - end address + 1, or unused
24 (18) - (begin page supervisor work area) PCBPCBE - PCBE link field	
28 (1C) PCBAPCB - floating APCB or APCBE header	
36 (24) PCBALCT - page allocation count	38 (26) PCBIOCT - page I/O count, or PCBRQCT - total page request count (V=R)
40 (28) PCBFLG4 - page supervisor error flags (see note 5)	41 (29) PCBFLG3 - page supervisor internal wall-markers (see note 6)
	42 (2A) PCBALID - page supervisor internal ID (see note 7)
	43 (2B) reserved

44 (2C)	PCBECB - ECB PCBECBA - ECB address (SVC request)	End of TCB PCB
48 (30)	PCBPSW - PSW save area	
56 (38)	PCBSAVE - register save area (16 fullwords)	119 (77)

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. PCBFLG1 0 (0)	1... .. .1. .... ..1. .... ...1 1... .... .1.. .... .1.. .... ...1	PCBPFSV PCBPFE PCBSYLS PCBSULS PCBABWT PCBABND PCBBUSY PCBPFNI	Flag byte: SVC entry. Page fault. System lock set this PCB. Supervisor lock set this PCB. ABEND waiting on PCB ECB. Task has failed. Busy PCB. Not a type-1 switch.
2. PCBFLG2 4 (4)	.1. 1... .... .1.. .... ...1 x.xx .x..	PCBCANT PCBGMRQ PCBVRKIL PCBRMSRQ	Flag byte: Page supervisor cannot handle this request. GETMAIN lock has been set for this PCB. V=R request override. PCB is for an RMS request. Reserved bits.
3. PCBENF1 16 (10)	1... .. .1. .... ..1. .... ...1 1... .... .1.. .... .1.. .... ...1	PCBENNE PCBENFX PCBENFR PCBENLD PCBENCL PCBENRL PCBENLT PCBENSE	Entry-flag byte: PCBENBG is the address of the first list entry. FIX request. FREE request. LOAD request. RELEASE (PGRlse) request. REAL request. LONG TERM request. Second exit requested.
4. PCBENF2 20 (14)	1... .. .1. .... ..1. .... ...1 1... .... .1.. .... .1.. .... ..xx	PCBENLE PCBENIG PCBENPB PCBENDPF PCBENSF PCBENOU	Entry-flag byte: Last entry. Ignore this entry. Real address passback. Disabled page fault. Stack FIX request. Page-out request. Reserved bits.

5. PCBFLG4
40 (28)

.1..
..1.
...1
.... 1...
.... .1..

x... ..xx

PCBIOER
PCBFTOVF
PCBRETRY

Page supervisor error flags:
I/O error page file.
I/O reserved.
FIX threshold overflow.
Can't do now; may retry request.
PCBCANT reserved (byte PCBFLG2
offset X'04').
Reserved bits.

6. PCBFLG3
41 (29)

1...
.1..
..1.
...1

.... 1...
.... .xxx

PCBRECL
PCBALSR

PCBAPCBD

PCBVRSR

Page supervisor internal wall-markers:
PCB has been through reclamation.
Dynamic allocation called as sub-
routine.
APCB depletion.
PCBFTOVF (byte PCBFLG4 offset
X'28') for preallocation.
V=R called as subroutine.
Reserved bits.

7. PCBALID
42 (2A)

1...
...1
.... 1...
.xx. .xxx

PCBDVID
PCBSRID
PCBMRID

Allocation routine ID:
Dynamic virtual allocation.
Single real (SQA).
Multiple real (V=R).
Reserved bits.



Page Device Descriptor Table (PDDT)

(Mapped by IHAPDDT; pointed to by PGSPDDTP, offset X'08' in PSIA)

0 (0) PDDLPG - low virtual page number in extent	2 (2) PDDHPG - high virtual page number in extent
4 (4) PDDCYL - no. of record/cylinder for device	PDDEBDDS PDDEBDSA - address of DEB device dependent (DASD) section
8 (8) PDDTRK - no. of record/track for device	PDDEBBS PDDEBBSA - address of DEB basic section
12 (C) PDDEVTP - DASD device (see note 1)	PDDIOB PDDIOBA - address of IOB associated with DEB, or list of three IOB addresses (2305 Model 2)

15 (F)

Note 1:

Flag	Byte	Bit	Mask Name	Meaning
1. PDDEVTP				DASD device type (same as UCBTYP byte for device):
	12 (C)			
		1... 1.1.	C3340RPS	3340 with RPS
		.... 11.1	C3330C	3330 Model 11
		.... 1.1.	C3340	3340 without RPS
		.... 1011	C3350	3350
		.... 1..1	C3330	3330 Model 1
		.... 1...	C2314/C2319	2314/2319
		.... .111	C2305M2	2305 Model 2

Partitioned Data Set Entry (PDS)

(Mapped by IHAPDS PDSBLDL=YES or PDSBLDL=NO)

A partitioned data set directory entry contains output from the linkage editor. It describes a member of a partitioned data set. An entry is a maximum of 74 bytes and contains the name or alias name of a member, a pointer to the first block of the named member, and a user data field.

The pointer to the named member, as well as pointers that may appear within the user data field, are all relative addresses (TTR).

PDS DIRECTORY ENTRY

All load modules after BLDL

Note: PDS entry before BLDL is the same as after BLDL, except that bytes 11 (B) and 12 (C) are deleted. Therefore, all following fields are displaced by a negative two bytes.

0 (0) PDS2NAME - load module member name or alias			7 (7)
8 (8) PDS2TTRP - relative address of first block (TTR)		11 (B) PDS2CNCT concatenation number of data set	
12 (C) PDS2LIBF library flags (see note 1)	13 (D) PDS2INDC indicators (see note 2)	14 (E) PDS2USRD - user data field (see note 3) PDS2TTRT - relative address of first block of text (TTR)	
PDS2TTRT continued	17 (11) PDS2ZERO - zero	18 (12) PDS2TTRN - relative address of note list or scatter/translate table	
PDS2TTRN continued	21 (15) PDS2NL - no. of entries in note list, or zero	22 (16) PDS2ATR - module attributes (see note 4)	
24 (18) PDS2STOR - total amount of contiguous storage required for module			27 (1B) PDS2FTBL length of first block of text
PDS2FTBL continued	29 (1D) PDS2EPA - entry point address associated with member name or alias		
32 (20) PDS2FTB1 flag byte (see note 5)	33 (21) PDS2FTB2 reserved	34 (22) PDS2FTB3 reserved	

Load Module - Scatter (after BLDL)

For values before BLDL, subtract 2 from field displacements

		35 (23) PDS2SLSZ - no. of bytes in scatter list
PDS2SLSZ continued	37 (25) PDS2TTSZ - no. of bytes in translation table	39 (27) PDS2ESDT - ESDID of control section for first block of text
PDS2ESDT continued	41 (29) PDS2ESDC - ESDID of control section containing entry point	

Load Module with Alias Name (after BLDL)

For values before BLDL, subtract 2 from field displacements

		43 (2B) PDS2EPM entry point for member name
PDS2EPM continued	46 (2E) PDS2MNM - load module member name (When PDS2NAME is an alias, PDS2MNM contains the original member name.)	
	53 (35)	

System Status Information (after BLDL)

For values before BLDL, subtract 2 from field displacements.

	54 (36) PDSCHLVL change level	55 (37) PDSSSIFB SSI flag byte (see note 6)
56 (38) PDSMBRSN - member serial number	58 (3A) PDSAPF (used by VS2 only PDSAPFCT - length of program authorization code (in bytes)	PDSAPFAC - program authorization code 59 (3B)

Flag Field	Bit	Meaning
<u>Notes:</u>		
1. PDS2LIBF 12 (C)		Type of library: this byte is normally zeros. If the DCB operand in the BLDL macro instruction was specified as zero, this byte contains a 1 if the name was found in the link library, and a 2 if the name was found in the job library.
2. PDS2INDC 13 (D)	1... .... .xx. .... ...x xxxx	Indicator byte: Name is an alias in the first field. Number of TTRs in the user data field. Length of user data field in halfwords.
3. PDS2USRD 14 (E)		<u>User Data Field</u> This field contains variable user data provided as input to the STOW macro instruction. Up to three pointers to locations within the member may be provided. The pointers must be four bytes long and must appear at the beginning of the user data field. Their format is as follows: TT - 2 bytes - Relative track from the beginning of the data set. R - 1 byte - Block number on that track. N - 1 byte - If the TTR points to a note list, this byte indicates the number of entries in the note list. If the TTR does not point to a note list, this byte contains zeros. The system status index (SSI) is a collection of control information, stored within each user's operating system, that defines the content and maintenance level of that system. For each IBM-supplied member in the user's system libraries, SSI information is stored in the member's PDS directory entry (user data). In macro and symbolic libraries, system status index (SSI) information is stored in the first four bytes of the user data field (bytes 12-15). In load-module libraries, SSI information is stored in the last four bytes of the user data field. (The actual offset depends upon the length of the user data field.) The format of the SSI information is shown at a displacement of 52(34).

Flag Field	Bit	Mask Name	Meaning
4. PDS2ATR Byte 1 22 (16)	1... ..	PDS2RENT	Attributes: Reenterable.
	.1... ..	PDS2REUS	Reusable.
	..1... ..	PDS2OVLY	In overlay structure.
	...x... ..	PDS2TEST	Not supported by VS1.
	....1... ..	PDS2LOAD	Only loadable.
	.... .1..	PDS2SECTR	Scatter format.
	.... .1..	PDS2EXEC	Executable.
	.... .1..	PDS21BLK	Module contains no RLD items and only one block of text.
	.... .0		Module contains multiple records with at least one block of text.
Byte 2 23 (17)	1... ..	PDS2FLVL	Module can be processed only by F level of linkage editor.
	0... ..		Module can be processed by all levels of linkage editor.
	.1... ..	PDS2ORG0	Linkage editor assigned origin of first block of text is zero.
	..1... ..	PDS2EP0	Entry point assigned by linkage editor is zero.
	...1... ..	PDS2NRLD	Module contains no RLD items.
	....1... ..	PDS2NREP	Module cannot be reprocessed by linkage editor.
	.... .x..	PDS2TSTN	Not supported by VS1.
	.... .1..	PDS2LEF	Module created by linkage editor F.
	.... .1..	PDS2REFR	Refreshable module.
5. PDS2FTB1 32 (20)	1... ..	PDSAOSLE	Flag byte: Module has been processed by OS/VS1 linkage editor.
	..1... ..	PDS2PAGA	Page alignment required for load module
	...1... ..	PDS2SSI	SSI information present. Reserved bits.
	....1... ..	PDSAPFLG	APF fields are present (VS2 only).
	.x... .xxx		Reserved bits.
6. PDSSSIFB 55 (37)	.1... ..	PDSFORCE	SSI flag byte: A FORCE control card was used when executing IHGUAP.
	..1... ..	PDSUSRCH	User-made change (not IBM-distributed).
	...1... ..	PDSEMFIX	Emergency, IBM-authorized fix has been made (not part of IBM-distributed maintenance package).
	....1... ..	PDSDEPCH	A change made to this member depends upon a change made to some other member in the system.
	.... .1..	PDSSYSGN	This change may require a partial regeneration of the system.
	.... .1..	PDSCMSGN	This change may require a complete regeneration of the system.
	.... .1..	PDSIBMMB	This member has been supplied by IBM.
	x... ..		Reserved bit.

Protected Free Queue Element (PFQE)

Two PFQE chains exist. One is for free problem program space in the partition. The other PFQE chain exists for free pageable PQA. Both PFQEs are identical in format. BBXUSFQP, offset X'00' in BBX, points to the problem program PFQE chain. BBXPPFQP, offset X'30' in BBX points to the pageable PQA PFQE chain.

0 (0)	Address of next PFQE on queue (zero if last PFQE)
4 (4)	Address of beginning of free area
8 (8)	Length of free area
12 (C)	Reserved

Partition Information Block (PIB)

(Mapped by IEFSD033; pointed to by TCBPIB, offset X'7C' in TCB)

0 (0) SD33ITTR - TTR of the TIOT for the suspended initiator	
4 (4) SD33LOTP - address of LCT used for problem programs, or SD33UCBL - address of UCB list used for deallocation in case of scheduler ABEND	
8 (8) SD33WECB - address of no-work ECB	
12 (C) SD33STAT status flags (see note 1)	13 (D) SD33ECBL - address of ECB list gotten by IEFSD510
16 (10) SD33BBTS status flags (see note 2)	17 (11) SD33TRCN - address of the TRCB chain
20 (14) SD33CSCB - address of CSCB for current task in this partition	
24 (18) SD33GRP - 1 to 15 job - class codes, beginning at low - order byte. The first byte contains a protect key set by DEFINE at IPL time. The other bytes contain binary zeros or a job class code, usually in descending numerical order. If a partition is defined as a system task partition, no job classes are specified. A X '5C' is placed in the low-order byte.	
39 (27)	
40 (28) SD33RTTR - address* of initiator's CSCB	
44 (2C) SD33DSO - address of DSOCB chain	
48 (30) SD33INTQ - internal queue pointer	
52 (34) Flag byte (see note 3)	SD33JTQE Address of TQE for job-step timing
56 (38) Number of tasks to be attached in this job step	SD33JPAQ Address of loaded reentrant modules being shared in the job step

60 (3C)	SD33IECB - address of initiator's ECB list
64 (40)	SD33JBNM - job name of job being scheduled.
72 (48)	SD33IJBNI - job name of the initiator active in this partition
80 (50)	SD33DTTR - TTR of initiator's output DSD (for indicative dump routine)
83 (53)	

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. SD33STAT 12 (C)	1... ..	SD33INIT	Status information: Initiator has been started in this partition.
	.1. . .	SD33GENS	Generalized start job has been started in this partition.
	..1.	SD33SUSP	Initiator suspended.
	...1	SD33RSTR	Initiator restored.
	.... 1...	SD33STRT	Start outstanding for initiator.
	.... 0...		Stop outstanding for initiator.
	.... .1..	SD33DFIN	Partition is being redefined.
	.... .1..	SD33WROP	Unit has been suspended at least once.
	.... ...1	SD33PPGM	Problem program is running.
2. SD33BBTS 16 (10)	xx..		Status information: Reserved bits.
	..10	SD33SWAD	EXCPVR=NO specified in initiator's parm field.
	..01	SD33SWA	SWA partition.
	.... 1...	SD33NTSK	Unending task in this partition.
	.... .1..	SD33ATCM	VTAM is being started.
	.... .0..		VTAM start successful.
	.... .1..	SD33RSRD	Restart reader command issued internally.
	.... ...1	SD33RTAM	RTAM is being started.
	.... ...0		RTAM start successful.
3. SD33JTQE 52 (34)	1...	SD33TENQ	The job-step TQE has been enqueued on the timer queue.
	.1.	SD33TIME	STIMER is issued for a problem program step.
	..xx xxxx		Reserved bits.

Program Interrupt Control Area (PICA)

(Mapped by IHAPICA; pointed to by PIEPICA, offset X'00' in the PIE)

0 (0) PICAPRMK program mask (see note 1)	1 (1) PICAEXIT - address of user routine to be given control when an interruption of a specified type occurs
4 (4) PICAITMK - interruption mask (see note 2)	7 (7)

Notes:

Flag Field	Bit	Meaning
1. PICAPRMK		Program mask:
0 (0)	0000 1...	Fixed-point overflow
	0000 .1..	Decimal overflow
	0000 ..1.	Exponent underflow
	0000 ...1	Significance
2. PICAITMK		Interruption mask:
4 (4)		
Byte 1	1...	This field expanded to four bytes to permit user to intercept his own page faults.
	01..	1 Operation
	0.1.	2 Privileged operation
	0..1	3 Execute
	0... 1...	4 Protection
	0... .1..	5 Addressing
	0... ..1.	6 Specification
	0... ...1	7 Data
Byte 2	1...	8 Fixed-point overflow (maskable)
	.1..	9 Fixed-point divide
	..1.	10 Decimal overflow (maskable)
	...1	11 Decimal divide
	.... 1...	12 Exponent overflow
	.... .1..	13 Exponent underflow (maskable)
	.... ..1.	14 Significance (maskable)
	.... ...1	15 Floating-point divide
Byte 3	.1..	User can intercept page faults.
	x.xx xxxx	Reserved bits



Program Interrupt Element (PIE)

(Mapped by IHA_{PIE}.TCB_{PIE}, offset X'04' in the TCB, points to a work area; the first word of the work area points to the PIE.)

0 (0)	PIEPICA	
PIEFLGS		PIEPICAA - address of current PICA
X'80'=task can't accept more interrupts		
4 (4)	PIEPSW - program interrupt old PSW (BC mode) stored at program interrupt time	
		11 (B)
12 (C)	PIEGR14 - save area for register 14	
16 (10)	PIEGR15 - save area for register 15	
20 (14)	PIEGR0 - save area for register 0	
24 (18)	PIEGR1 - save area for register 1	
28 (1C)	PIEGR2 - save area for register 2	
		31 (1F)

Partition Page Queue Element (PPQE) and PQA Allocation Queue Element (PAQE)

The PPQE is pointed to by byte X'C' of the problem program partition boundary box.
The PQA allocation queue element is pointed to by byte X'1C' of the problem
program partition boundary box.

0 (0)	Address of next queue element, or zero (if last)
4 (4)	Address of page group
8 (8)	Length of page group
12 (C)	Reserved

15 (F)



Page Supervisor Information Area (PSIA)

(Mapped by IHAPSA; pointed to by CVTPGSIA, offset X'15C')

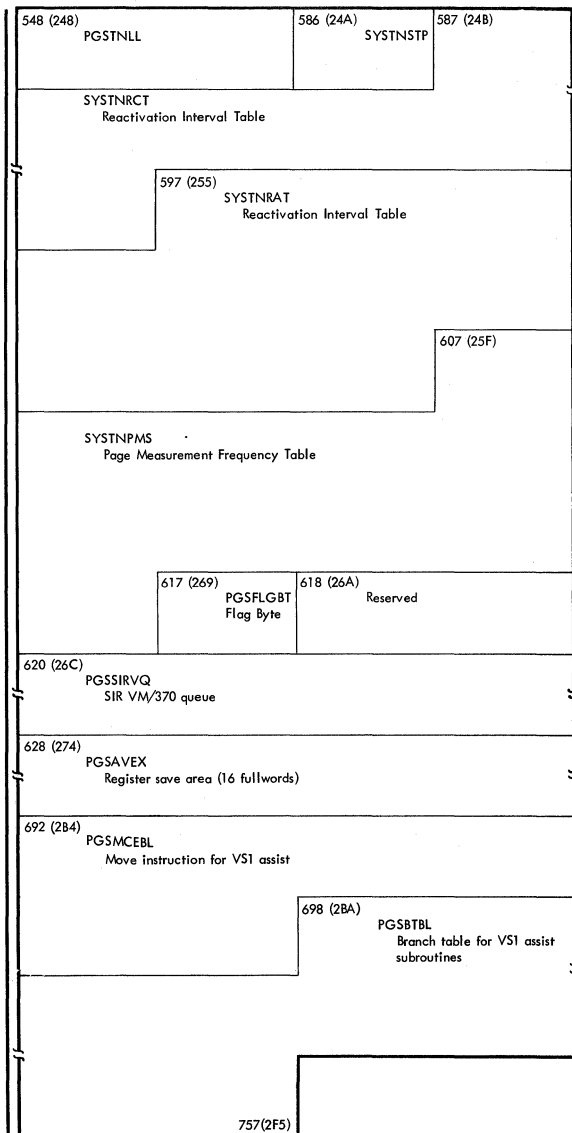
0 (0) X'80' = WAIT; X'40' = POST	1 (1) PGSECB - address of page supervisor RB
4 (4) PGSRSTP - address of real storage page table	
8 (8) PGSPDDTP - address of page device description table	
12 (C) PGSAPCBT - address of APCB/APCBE Table	
16 (10) PGSSMFTT - address of TCB Table	
20 (14) PGSSMFP - address of SMF statistics buffer	
24 (18) PGSDRPEN - address of deactivation subroutine for ABEND purge	
28 (1C) PGSWRTRE - address of entry point to reactivation	
32 (20) RLELIST - address of reactivation list elements	
36 (24) PGSSSEP - address of start/stop entry point	
40 (28) PGSABEBB - address of pageable supervisor boundary box for batch page post	
44 (2C) RSTPPCT - number of pageable pages	46 (2E) RSTVRPCT - no. of pages from end of nucleus to V=R boundary
48 (30) PGSSIRPQ - SIR post queue (service-out queue)	

56 (38) PGSPAFOQ - fix overflow queue	
64 (40) PGSPARDQ - APCBE resource depletion queue	
72 (48) PGSDVAQ - dynamic allocation input queue	
80 (50) PGSIOPQ - PCB paging queue	
88 (58) PGSMRAQ - V=R deferred allocation queue	
96 (60) PGSDEAQ - PCB deactivation queue	
104 (68) RSTNUC16- real page number of last nucleus page	106 (6A) RSTNUCEP - real page number of end of nucleus
108 (6C) RSTVRBDP - real page number of page above V=R boundary	110 (6E) RSTENDP- real page number of end of real storage
112 (70) RSTFCUC - Fix count update constants	
116 (74) RSTSFCT- Short term fix count	118 (76) RSTTFXCT- Short term plus long term fix count
120 (78) RSTPICTR- Number of page-ins in progress	122 (7A) RSTRLCTR- Number of page-outs in progress
124 (7C) RSTLTV- Available page queue low threshold value	126 (7E) RSTHTV- Available page queue high threshold value

128 (80) RSTAPC- Available page frame count	130 (82) RSTSTFT- Short term FIX threshold
132 (84) RSTLTFT- Long term FIX threshold	134 (86) RSTSVCFT- SVC FIX threshold
136 (88) Reserved	142 (8E) PGSTARTS- Diminishing activity indicator
144 (90) RSTFTLV- FIX threshold lock value	146 (92) RSTAPCLV- Allocation processor lock value
148 (94) RSTTNIUQ- Total number of in-use queues	150 (96) RSTSSCTR- Number of startable shift pointers
152 (98) Halfword constants for manipulating registers	
160 (A0) VRLINE- Address of V = R boundary (2K multiple)	
164 (A4) PGSTCBA- Address of page supervisor TCB	
168 (A8) PGSRBP- Address of page supervisor RB	
172 (AC) PGSAVTP- Address of page supervisor appendage vector table	
176 (B0) PGSQDEN0- Entry point to queue dispatcher	
180 (B4) PGSVFEN0- Entry point to long term FIX optimization	

184 (B8)		PGSVRSB0- Address of dynamic allocation for PCBE completion processing
188 (BC)		PGSVRSB1- Address of dynamic allocation for page relocation
192 (C0)		PGSVREN2- V=R entry point to kill a deferred request
196 (C4)		PGSQAEN0- Entry point to I/O queue activation
200 (C8)		PGSRCEN0- Entry point to reclamation
204 (CC)		PGSRLEN0- Entry point to release
208 (D0)		PGSDREN0- Entry point to task deactivation
212 (D4)		PGSBTBOV - Branch table to data area subroutines
272 (110)		Pointers for accessing real storage queues
304 (130)	306 (132)	IEARETH - Reactivation lock/threshold
		PGSDRPR1 - Partition Priority
308 (134)		PGSDRREP - Address of RLE for reactivation
312 (138)		Data for page measurement processor (IEAPGSPM)
		322 (142) Data for enable/disable subroutine

324 (144)	Data for page supervisor I/O routines
344 (158)	APCB associated data (free pool queue header, APCBE free pool count, preallocation lock value)
352 (160)	QPPD associated data (Processor entry points, work-to-do bytes, and lock bytes)
440 (188)	PGSSAVE - Register save area (16 fullwords)
504 (1F8)	Timed Reactivation Data (used by IEAPGSWR and IEAPGSDR)
560 (230)	PGSPMFT Page Measurement Frequency Table
569 (239)	RSTHTVT Real Storage High Threshold Value Table
579 (243)	Reserved
580 (244)	RSTUSTOP - Page Tune in-use queue above which Start/Stop sets the Stop Line



Program Status Word (PSW)

(Mapped by IHAPSW)

0 (0) PSWSM system mask (see note 1)	1 (1) PSWKEY protection key (see note 2)	2 (2) PSWCCPM condition code and mask (see note 3)	3 (3) PSWSP set to X'00'
4 (4) PSWIA - instruction address (if PSW inactive, the first byte of this field is used as a save area for the system lock, supervisor lock, and deactivation eligibility flags)			

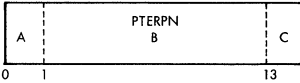
Notes:

Flag Field	Bit	Mask Name	Meaning
1. PSWSM 0 (0)	.1.. .... .... .1.. .... ..1. .... ...1 x.xx x...	PSWPER PSWDAT PSWIO PSWXTRNL	System masks: Program event recording Dynamic address translation Input/output External Reserved bits
2. PSWKEY 1 (1)	.... 1... .... .1.. .... ..1. .... ...1 xxxx	PSWMODE PSWMCH PSWWAIT PSWPRBLM	Protection key: Extended control mode Machine check mask Wait state Problem state Reserved bits
3. PSWCCPM 2 (2)	..xx 1... .... .1.. .... ..1. .... ...1 xx..	PSWFPO PSWDO PSWEU PSWSIG	Program mask Condition code. Fixed point overflow Decimal overflow Exponent underflow Significance Reserved bits

Page Table Entry (PTE)

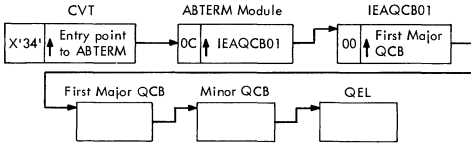
(Mapped by IHAPTE; control register 1 points to the segment table, and the segment table entry points to the page table. For the format of the segment table entry, see OS/VS1 Supervisor Logic, SY24-5155.)

HEX
0



- A - A high-order bit used to indicate the status of the PTE.
Initially this bit is on, indicating that a key is present in field B.
When a real page number has been assigned to the virtual page, this bit is off.
- B - Initially this field contains a key in bits 3-6. When bit 7 is on, the page is fetch protected. When a real page number is assigned, this field is combined with field A (now zero) to make a thirteen-bit real-page number. This page number plus eleven bits of zero form the real page address.
- C - A sequence of three bits:
 - bit 13 virtual page invalid bit (when this bit is on, no mapping is recognized by the hardware).
 - bit 14 must be zero.
 - bit 15 virtual page reference bit (user bit) indicates status of the page on the page file data set.

Queue Control Block (QCB)



Major QCB

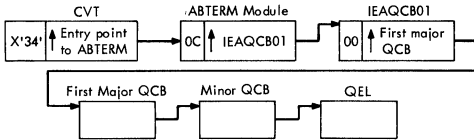
0 (0)	NXMAJ - address of next major QCB
4 (4)	PREVMAJ - address of previous major QCB
8 (8)	FSTMIN - address of first minor QCB
12 (C)	MAJNAME - major QCB name
19 (13)	

Minor QCB

0 (0)	FSTQEL - address of first QEL	
4 (4)	PREVMIN - address of previous minor QCB	
8 (8)	NXMIN - address of next minor QCB	
12 (C) LMINAME length of minor name	13 (D) QCBPKF - TCB protect key field	14 (E) MINAME - minor QCB name (variable length)



Queue Element (QEL)



0 (0) QELSMC SMC indicator (see note 1)	1 (1) NXQEL - address of next QEL
4 (4) CODE - type of request (see note 2)	5 (5) PREVQEL - address of previous QEL
8 (8) QELTCB - address of enqueueing TCB	
12 (C) SVRBPTR - address of SVRB for ENQ, or - UCB address, if a RESERVE request and if requester was given control of resource	15 (F)

Notes:

Flag Field	Bit	Meaning
1. QELSMC		
0 (0)	0000 0010	SMC indicator: SMC = SYSTEM
	0000 0001	SMC = STEP
	0000 0000	Normal
2. CODE		
4 (4)	1000 0000	Type of request: Shared request
	0100 0000	Reserve request (shared DASD)
	0000 0001	SAVE request (resource not be dequeued for GENERIC=COND)
	0000 0000	Exclusive request
	..xx xxx.	Reserved bits

Request Block (RB)

To determine the type of RB, examine flag byte XSTAB1, offset X'0A', and compare it to Note 2.

FRB (Finch Request Block) and AFRB (Available Finch Request Block)

-8 (-8) XRBSUC - address of the XRBSUC field in the RB for the program loaded just before the program represented by this RB, or zero (if first RB). RB pointed to is on job pack area queue.		
-4 (-4) XRBPPE - address of XRBSUC in RB for next program (see note 1)		
0 (0) XRBNM - program name		
8 (8) XRBCDBPY - zero	9 (9) XRBSZY - size of this RB	10 (A) XSTAB - flag bytes (see note 2)
12 (C) XRWTLL - address of most recent wait list element		
16 (10) XRREQ - address of TCB for task that requested that the module be loaded		
20 (14) XRTLPRB - address of the LPRB built by FINCH for the program brought in by a LOAD instruction		
23 (17)		

IRB (Interrupt Request Block) and SIRB (Supervisor Interrupt Request Block)

0 (0) XRBNM - timer flags (1 byte -- see note 3) meaningless information (7 bytes)		
8 (8) XRBCDBPY - zero	9 (9) XRBSZY - size of this RB	10 (A) XSTAB - flag bytes (see note 2)

12 (C) zero	XRBEPA - entry-point address
16 (10)	XRBPBW - user's old PSW (8-byte field overlaid by 1-byte field at offset X'14')
20 (14) XRBFLLAG1 flag byte (see note 4)	
24 (18)	XRBBQ - address of RQE or IQE
28 (1C) XRBBWT wait count	XRBLNK XRBLNKA - primary (active) queuing field; address of previous RB or of TCB if this RB first or only on queue
32 (20)	XRBBREG - save area for general registers 0 - 15
95 (5F)	

LPRB (Loaded Program Request Block) and LRB (Load Request Block)

- 8 (-8)	XRBSUC - address of the XRBSUC field in the RB for the program loaded just before the program represented by this RB, or zero (if first RB). RB pointed to is queued on load list or job pack area queue.	
-4 (-4)	XRBBPRE - address of XRBSUC in RB for next program (see note 1)	
0 (0)	XRBBNM - program name	
8 (8) XRBCDBPY - displacement to contents directory block, or zero	9 (9) XRBSZY - size of this RB + CDB in doublewords	10 (A) XSTAB - flag bytes (see note 2)

12 (C) XRB DCT load count (see note 5)	XRBEP XRB EPA - entry-point address
16 (10) XRBUSECT use count	17 (11) Not used
24 (18) XRBMAJ - address of name field for the RB that is the major RB for this module	
28 (1C) XRBMIN - address of the prefix field of the queue of minor LRBs and LPRBs associated with this major RB	
31 (1F)	

PRB (Program Request Block)

0 (0) XRBNM - program name		
8 (8) XRB CDBPY - zero	9 (9) XRB SZY - size of this RB	10 (A) XSTAB - flag bytes (see note 2)
12 (C) zero	XRBEP XRB EPA - entry-point address	
16 (10) XRBPSW - user's old PSW (8-byte field overlaid by 1-byte field at offset X'14')		
20 (14) XRBFLAG1 flag byte (see note 4)		
24 (18) XRBMAJ - address of name field for the RB that is the major RB for this module		

28 (1C) XRBWT wait count	XRBLNK XRBLNKA - primary (active) queuing field; address of previous RB or of TCB if this RB first or only on queue	31 (1F)
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SVRB (Supervisor Request Block)

0 (0)	XRBNM - For type-3 and -4 SVCs only: - TTRN address, on the SVC library, of the load module, where N=0 (concatenation number), (4 bits), followed by - 4-digit number ysss, where y=number of current phase of the routine (for first or only phase, y=0); sss=SVC number in unpacked signed decimal.	
8 (8) XRBCDBPY - zero	9 (9) XRBSZY - size of this RB	10 (A) XSTAB - flag bytes (see note 2)
12 (C) zero	XRBEPA - entry-point address	
16 (10)	XRBPSW - user's old PSW (8-byte field overlaid by 1-byte field at X'14')	
20 (14) XRBFLAG1 (see note 4)		
24 (18)	XRBQ - number of bytes in the program (type-3 and type-4 SVCs) (2 bytes) attributes returned from BLDL (2 bytes)	
28 (1C) XRBWT wait count	XRBLNK XRBLNKA - primary (active) queuing field; address of previous RB or of TCB if this RB first or only on queue	
32 (20)	XRBREG - register save area for general registers 0 - 15	
		95 (5F)
96 (60)	XRBESA - extended save area (10 doublewords)	
		175 (B0)

(Pointed to by XRBCDBPY, offset X'08')

0 (0)	CDBMDAD	
CDBNLSZ - size of note list in doublewords		CDBMDADA - address of note list and load module
4 (4)	CDBMDSZ	
CDBSUBPL subpool number of note list and load module		CDBMDSZA - size of note list and load module in doublewords

7 (7)

Notes:

1. XRBPRE - address of the XRBSUC field in the RB for the program loaded immediately after the program represented by this RB. If this RB is for the most recently loaded program, this field contains the address of the TCBLLS field in the task control block, or the address of the PIBJPQ field in the PIB if this RB is queued on the job pack area queue.

In an LRB or LPRB, the RB pointed to is queued on the load list or on the job pack area queue; if this is on FRB, the RB pointed to is queued on the job pack area queue.

Flag Field	Bit	Mask Name	Meaning
2. XSTAB 10 (A)			Flag bytes:
XSTAB1 (Byte 1)	0000	XRBPBRB	PRB - the program was not loaded via a LOAD macro instruction and does not have minor entries identified via an IDENTIFY.
	0001	XRBPBRB2	PRB - the program was not loaded via a LOAD macro instruction and does have minor entries identified via an IDENTIFY.
	0010	XRBLPRB	LPRB - the program was loaded via a LOAD macro instruction and does not have minor entries identified via an IDENTIFY.
	0011	XRBLPRB2	LPRB - the program was loaded via a LOAD macro instruction and does have minor entries identified via an IDENTIFY.
	0100	XRBI RB	IRB.
	0101	XRBF RB	FRB.
	0110	XRBTIRB	TIRB.
	1000	XRBSIRB	SIRB.
	1100	XRBSVRB	SVRB - the program is a type-2 SVC routine or a type-3 or -4 SVC routine that has not yet been loaded.
	1101	XRBSVRB2	SVRB - the program is a type-3 or -4 SVC routine that has been loaded.
	1110	XRBLPRB3	LPRB - this block describes a minor entry identified via an IDENTIFY macro instruction.
	1111	XRBLRB	LRB.
	... 1...	XRBSVRES	The type-3 or -4 SVC routine is resident.
	... .1.	XRBCCKPT	A checkpoint may be taken in a user exit from this SVC routine.
	... ..1.	XRBLRFBX	LRB - module was long-term fixed by NIP.
	... ..1	XRBTXR	IRB - ETXR exit routine.
	... ..1	XRBRFR	Refreshable module.
XSTAB2 (Byte 2)	0... ..	XRBNRENT	Module being loaded is reentrant.
11 (B)	1... ..		Module being loaded is not reentrant.
FRB and AFRB only	.1... ..	XRBTGMAN	FINCH routine has executed a GETMAIN.
	... ..1.	XRBFRRB	Free RB space at ABEND (if RB is on JPAQ); or free AFRB (if RB is not on JPAQ).
	... ..0.		If RB is on JPAQ, don't free RB space. RB is an AFRB.
	...xx xx.x		Reserved bits.

XSTSB2 (Byte 2) <u>All RBs</u> <u>except</u> <u>FRB</u>	1... ..	RBTCBP	XRBLNK field points to TCB.
	.1... ..	XRBPROT	This module came from a library that is APF-protected (LRB and LPRB).
	.1... ..	XRBACTV	Active program (does not apply to LRB and LPRB).
	..1... ..	XRBRREG	Registers 2-14 are to be restored from XRBRREG.
	...1... ..	XRBRREG	Reenterable or reusable program.
	.... 00..	XRBNQIUE	IRB has no interrupt queue elements.
	.... 01..	XRBIQERE	IRB has interrupt queue elements that are request elements.
	.... 10..	XRBDLPRB	This dummy LPRB or PRB in a partition for a program in the reenterable load module area. The LPRB or PRB for the program is in the reenterable load module area.
	.... 11..	XRBIQENR	IRB has interrupt queue elements that are not request elements.
	.... .1.	RBFRRB	Request block storage is to be freed when program returns.
3. XRBNM 0 (0)	.... .1	XRBBWAIT	Wait on less than the number of specified events.
	.... ...0		Wait on a single event or all of the specified events.
	1... ..	RBTMQUE	IRB timer flags: Timer element not on queue.
	.1... ..	RBTMTOD	Local time of day option is used.
	...1... ..	RBWLIM	Wait limit exceeded.
	.... 1...	RBTMCMP	Interval has expired.
	.... .1..	RBMIN2	Exit specified with task or read request.
	.... .11	RBRREQ	Real request.
	.... .01	RBWREQ	Wait request.
	.... .00	RBTRREQ	Task request.
4. XRBFLAG1 20 (14)	1... ..	XRBPFSW	Flag byte (appears as byte 4 of XRBPWSW): Copy of paging lock bit CVTPFSW.
	.1... ..	XRBSRSW	Copy of paging lock bit CVTSRSW.
	.... .1	XRBTIS	Program issued WAIT.
	...xx xxx.		Reserved bits.
5. The load count equals the number of loads (LOAD or IDENTIFY) minus the number of DELETE instructions.			

Request Parameter List (RPL)

(Accessed by request processing routines, using register 1; mapped by IFGRPL)

The RPL contains user - request and error - passback information. It is used by VSAM, VTAM, and JES to maintain information required by the GET and PUT macros.

The control block consists of an area common to all users and a contiguous extension created for VTAM. The extension is generated if you code AM=VTAM in the RPL macro instruction.

0 (0) RPLID - RPL identifier; set to X'00'	1 (1) RPLSTYP - RPL subtype (see note 1)	2 (2) RPLREQ - RPL request type (see note 2)	3 (3) RPLLEN/RPLLEN2 length of this RPL
4 (4) RPLPLHPT - address of the last record processed, or address of place holder (VSAM)			
8 (8) ECB flags (see note 3)	RPLECB Internal ECB or address of external ECB		
12 (C) RPLSTAT - current RPL status (see note 4)	RPLFDBWD - feedback word RPLFDBK - error feedback (see note 5)		

VTAM Overlay

16 (10) RPLRH3 third request header (see note 6)	17 (11) RPLSRTYP - send or receive type (see note 7)	18 (12) RPLCHN - position in chain (see note 8)	19 (13) RPLVTFL1 VTAM flags (see note 9)
20 (14) RPLVTFL2 POST/RESPOND flags (see note 10)	21 (15) RPLCNTDF - data flow control codes (see note 11)	22 (16) RPLCNTDC - data flow control codes (see note 12)	23 (17) RPLCNTSC session control codes (see note 13)

Other Access Methods

16 (10) RPLKEYLE/RPLKEYL - key length (PROC=GEN)	18 (12) RPLSTRID - transaction identifier
20 (14) RPLCCHAR - address of control character for unit record devices	

24 (18)	RPLDACB - address of ACB		
28 (1C)	RPLTCBPT - address of TCB, or zero		
32 (20)	RPLAREA - address of area containing data record		
36 (24)	RPLARG - address of search argument; pointer to relative address for POINT operation; or RPLSAF - VTAM source address field (2 bytes), followed by RPLDAF - VTAM destination address field (2 bytes)		
40 (28)	RPLOPTCD		
RPLOPT1 option byte 1 (see note 14)	RPLOPT2 option byte 2 (see note 15)	RPLOPT3 option byte 3 (see note 16)	RPLOPT4 option byte 4 (see note 17)
44 (2C)	RPLNXTRP/RPLCHAIN - address of next RPL		
48 (30)	RPLRLEN - length of record		
52 (34)	RPLBUFL - length of user buffer		
56 (38)	RPLOPTC2		
RPLOPT5 option byte 5 (see note 18)	RPLOPT6 option byte 6 (see note 19)	RPLOPT7 option byte 7 (see note 20)	RPLOPT8 option byte 8 (see note 21)

VTAM Overlay

60 (3C)	RPLOBSQV - STSN outbound sequence number	62 (3E)	RPLIBSQV - STSN inbound sequence number
64 (40)	RPLOBSQ - STSN outbound action codes (see note 22)	65 (41)	RPLIBSQ - STSN inbound action codes (see note 23)
		66 (42)	RPLSEQNO - response sequence number identifier

Other Access Methods

60 (3C)	RPLRBAR - RBA return location (8 bytes)		
RPLAIXPC - alternate - index pointer count	RPLAIXID - X'00' = RBA pointer; X'80' = prime key pointer	reserved	
64 (40)	RPLDDDD - return area for relative byte address		

68 (44)	69 (45)	70 (46)
RPLEXTDS/ RPLEXTD1 - exit definitions (see note 24)	RPLACTIV - active indicator X'FF'=active X'00'=inactive	RPLEMLEN - length of error message area
72 (48)	RPLERMSA - address of error message area	
76 (4C)	RPLAAREA - address of VTAM alternate data area (input area for data received in conversational mode)	

VTAM Extension

80 (50) RPLAARLN - length of VTAM alternate data area			
84 (54) RPLARCLN - length of VTAM alternate record			
88 (58) RPLDSB RPLDSB1 - VTAM device status byte 1		RPLDSB2 - VTAM device status byte 2	90 (5A) RPLESR1 response 1 from 3270 control unit
91 (5B) RPLESR2 response 2 from 3270 control unit			
or		or	
88 (58) RPLSSNSI RPLSSEI system sense error codes (see note 25)		RPLSSMI system sense modifier input	90 (5A) RPLUSNSI - user sense input
92 (5C) RPLUSFLD - VTAM user field; at OPNDST time, the contents of each terminal are saved and returned to the RPL on completion of any request for or by that terminal			
96 (60) RPLOPT9 VTAM options (see note 26)	97 (61) RPLOPT10 VTAM options (see note 27)	98 (62) RPLOPT11 VTAM options (see note 28)	99 (63) RPLOPT12 VTAM options (see note 29)

100 (64) RPLSSEO system sense error codes (see note 30)	RPLSSNSO RPLSSMO system sense modifier codes	102 (66) RPLUSNSO - user sense output
104 (68) RPLSAV13 - Save area for VTAM fast path		
108 (6C) RPLSIGDA - Signal data field		

Notes:

Flag Field	Bit	Mask Name	Meaning
1. RPLSTYP 1 (1)	1111 1111	RPLCRID	RPL subtype:
	0100 0000	RPLS3540	CRPL identifier
	0010 0000	RPLSVTAM	3540
	0001 0000	RPLSVSAM	VTAM
	0001 0001	RPLSVRP	VSAM
	0000 1101		VRP
	0000 0000		JECS
			Data management
2. RPLREQ 2 (2)	0000 0000	RPLGET	Request type:
	0000 0001	RPLPUT	GET
	0000 0010	RPLCHECK	PUT
	0000 0011	RPLPOINT	CHECK
	0000 0100	RPLENDRE	POINT
	0000 0101	RPLERASE	ENDREQ
	0000 0110	RPLVERIF	ERASE
	0000 0111	RPLIMPRT	VERIFY
	0000 0111	RPLJSFMT	IMPORT
	0000 1000	RPLPFMTD	JES format request.
	0000 1001	RPLPFMTI	Data preformat.
	0000 1010	RPLFRCIO	Index preformat.
	0000 1011	RPLGETIX	Force I/O.
	0000 1100	RPLPUTIX	GETIX
	0000 1101	RPLSRCHB	PUTIX
	0000 1110	RPLMRKB	SRCHBFR
	0000 1111	RPLWRTB	MRKBFR
	0001 0001	RPLWRITE	WRTBFR
	0001 0010	RPLRESET	WRITE (VTAM)
	0001 0011	RPLDO	RESET (VTAM)
	0001 0101	RPLQUISE	DO (VTAM)
	0001 0110	RPLSMLGO	SETLOGON (VTAM)
	0001 0111	RPLOPND5	SIMLOGON (VTAM)
	0001 1001	RPLCHNG	OPNDST (VTAM)
	0001 1010	RPLINQIR	CHANGE (VTAM)
	0001 1011	RPLINTPT	INQUIRE (VTAM)
	0001 1101	RPLREAD	INTRPRET (VTAM)
	0001 1110	RPLSLICT	READ (VTAM)
	0001 1111	RPLCLOSE	SOLICIT (VTAM)
	0010 0001	RPLCLACB	CLSDST (VTAM)
	0010 0010	RPLSNDCD	CLOSEACB (VTAM)
	0010 0011	RPLRCVCD	SEND (VTAM)
	0010 0100	RPLRSRCD	RECEIVE (VTAM)
	0010 0101	RPLSSCCD	RESETSR (VTAM)
	0010 0111	RPLSDCMD	SESSIONC (VTAM)
	0010 1000	RPLVCMD	SENDCMD (VTAM)
			RCVCM (VTAM)
3. RPLECB 8 (8)	1... ..	RPLWAIT	ECB flags:
	.1... ..	RPLPOST	Request issued.
	..xx xxxx		Request completed.
			Reserved bits.

The following codes are not stored in RPLREQ, but they are available in register 0 when the function is entered and stored in RPLREQ during processing of the function.

0000 0010	RPLCHECK	CHECK
0000 0100	RPLENDRE	ENDREQ

4. RPLSTAT 12 (C)	.1.. .... ..1. x..x xxxx		Current RPL status: CHECK issued. ENDREQ issued. Reserved bits.
5. RPLFDBK RPLRTNCD/RPLERREG 13 (D)	0000 0000 0000 0100 0000 1000 0000 1100 0001 0000 0001 0100 0011 1100	RPLNOERR RPLBLKER RPLLOGER RPLPHYER RPLRECOV RPLSETUP RPLVABND	Error feedback (3 bytes). RPL return code: Normal return. Invalid control block. Illogical request. Physical I/O error. Recoverable error (JES/RES). Device Setup error (JES/RES). VTAM encountered ABEND condition.
RPLCNDCD (2 bytes) RPLCMPON (1 byte) RPLFDB2 (1 byte) 14 (E)	1... .... ..1. .... ..1. .... ...1 1... 0... .... ..1. .... ..1. .... ..1	RPLERLK RPLRVID RPLATND RPLDVUNS RPLIOERR RPLDLGFL RPLCUERR RPLSTSAV	RPL condition code. Component issuing code (VSAM). VTAM reason code. Error lock set. RVI received. ATTN received. Device unusable. Output I/O error. Input I/O error. Dialog unit failed. Control unit failed. Sense bytes present.
RPLERRCD RPLFDB3 15 (F)	1... .... ..1. .... ...1 1... .... ..1. .... ..1. .... ..1 ...x.	RPLUINPT RPLREOB RPLREOM RPLREOT RPLLGFRG RPLRLG RPLRDSOH	VSAM error code. VTAM data flags. Unsolicited input. End of block. End of message. End of transmission. Logoff detected. Leading graphics received. SOH (start of header) received. Reserved bit.
6. RPLRH3 16(10)	1... .... ..1. .... ..1. .... ...1 1... .... .xxx	RPLBB RPLEB RPLCMD RPLCHREQ RPLCSI	Third request header byte: Begin bracket. End bracket. Change direction from send to receive immediately. Change direction from send to receive is requested. CODESEL alternate. Reserved bits.
7. RPLSRYP 17 (11)	1... 0... 1... 0.. .... ..1. 1 ...x.	RPLSRESP RPLRRESP RPLNFSYN RPLDFASY RPLRREAD	Send or receive type: A response is being sent. A new request is being sent. Receive the first response from the response queue. Receive the first unit from the data flow synchronous queue. Receive the first unit from the data flow asynchronous queue. Receive from the basic input queue Reserved bits.
8. RPLCHN 18 (12)	1... .... ..1. .... ..1. .... ...1 xxxx	RPLFIRST RPLMIDLE RPLLAST RPLONLY	Position in request unit chain: First in RU chain. Intermediate RU. Last in RU chain. Only one RU in chain. Reserved bits.
9. RPLVTF1 19 (13)	.1.. .... ..0.. .... ..1. x..x xxxx	RPLVTUSE RPLAUTUS	VTAM flags: This is a VTAM system RPL. This is a user RPL. VTAM fast path. Reserved bits.

Flag Field	Bit	Mask Name	Meaning
10. RPLVTF2 20 (14)	1... ..	RPLSCHD	Post/respond flags: Post the RPL when the request has been scheduled.
	0... ..		Post the RPL when the response has arrived.
	.... 1..	RPLEX	Return only exception responses (with SEND); or, this is an exception response (with RECEIVE).
	.... 0..		Return all responses.
	.... 0..	RPLNFME	Return a functional management end response (with SEND); or, this is a functional management end response (with RECEIVE).
	.... 1..	RPLRRN	Return a reached recovery node response (with SEND); or, this is a reached recovery node response (with RECEIVE).
	.... x..		Reserved bits.
	...x x..		
11. RPLCNTDF 21 (15)	1... ..	RPLDATA	Data flow control codes: Data request, not a control code.
	.1.. ..	RPLNCNEL	Cancel request unit chain.
	..1.	RPLQC	Quiesce complete (following QEC).
	...1	RPLQEC	Quiesce at end of current request unit chain.
	.... 1..	RPLCHASE	Send all outstanding responses followed by the CHASE response.
	.... 1..	RPLRELQ	Quiesce is released.
	.... xx		Reserved bits.
12. RPLCNTDC 22 (16)	1... ..	RPLBID	Data flow control codes: Request permission to begin bracket.
	.1.. ..	RPLRTR	Ready to receive.
	..1.	RPLLUS	Logical unit status.
	...1	RPLSIGNL	Signal data available.
	.... xxxx		Reserved bits.
13. RPLCNTSC 23 (17)	1... ..	RPLSDT	Session control codes: Start data traffic.
	.1.. ..	RPLCLEAR	Clear all data traffic for this session.
	..1.	RPLSTSN	Set and test sequence numbers.
	...1	RPLSHUTD	Shutdown is requested.
	.... 1..	RPLSHUTC	Shutdown is complete.
	.... 1..	RPLRQR	Request recovery of session.
	.... 1..	RPLRSHUT	Request shutdown.
	.... x		Reserved bit.
14. RPLOPT1 40 (28)	0... ..	RPLLOC	Option byte 1: MOVE mode.
	1... ..		LOCATE mode.
	.1.. ..	RPLDIR	Direct search access.
	..1.	RPLSEQ	Sequential access.
	...1	RPLSKP	Skip sequential access.
	.... 1..	RPLASY	Asynchronous processing.
	.... 1..	RPLKGE	Search key greater than or equal to.
	.... 0..		Search key equal to.
	.... 1..	RPLGEN	Generic key request.
	.... 0..		Full key request.
	.... 1..	RPLECBSW	External ECB.
	.... 1..	RPLECBIN	Alternate name for RPLECBSW (VTAM).
15. RPLOPT2 41 (29)	1... ..	RPLKEY	Option byte 2: Keyed access.
	.1.. ..	RPLADR	Addressed access.
	..1.	RPLADD	Alternate name for RPLADR.
	...1	RPLCNV	Control interval access.
	.... 1..	RPLBWD	BWD = 1, for backward VSAM processing.
	.... 1..	RPLLRD	LRD = 1, to locate last record of the data set.
	.... 1..	RPLUPD	Update.
	.... 1..	RPLNSP	Note CCW string position.
	.... x..		Reserved bit.

16. RPLOPT3 42 (2A)	1... ..	RPLEODS	Option byte 3:
	.1... ..	RPLSFORM	End of user SYSOUT.
	.1... ..	RPLBLK	Special form on remote printer.
	...1... ..	RPLVFX	Blocked UCS data checks.
	...1... ..	RPLFLD	Verify UCS/FCB information
	... .01.	RPLFMT	Load UCS buffer in fold mode.
	... .00.		FCB load.
	... .10.		UCS load.
	... ..1	RPLALIGN	3800 Printing Subsystem.
			Align FCB buffer loading and notify operator.
17. RPLOPT4 43 (2B)	1... ..	RPLENDR	Option byte 4:
	.1... ..	RPLMKFRM	3800 end of transmission.
			3800 Printing Subsystem
	..1... ..	RPLPDIC	mark form.
	... ..1	RPL1COPY	PDIC passed (JES/RES).
	...x xxx.		Pass only one copy of data set (JES/RES).
18. RPLOPT5 56 (3B)	0... ..	RPLDLGIN	Reserved bits.
	1... ..		Continue reading in any terminal mode.
			Continue reading in specific terminal mode.
	..0... ..	RPLPSOPT	Make terminal available to any application.
	..1... ..		Pass terminal to requesting application.
	...x xx..	RPLWRTP	Write type:
	...1... ..	RPLNERAS	Write to 3270 but do not erase what is currently displayed.
	... 1... ..	RPLEAU	Write to 3270 and erase unprotected fields.
	... .1..	RPLERACE	Write to 3270 and erase current display.
	... .0..	RPLNODE	Read from a specific terminal.
	... .1..		Read from any terminal.
	... ..0	RPLWROPT	Nonconversational mode.
	... ..1		Conversational mode.
19. RPLOPT6 57 (3C)	...x	RPLUNTP	Reserved bit.
	1... ..	RPLEOB	Option byte 6:
	.1... ..	RPLEOM	Unit type.*
	..1... ..	RPLEOT	Write a block of data.
			Write the last block of a message.
	...1... ..	RPLCOND	Write the last block of the transmission.
	... 1... ..	RPLNCOND	Do not stop operation if started (used with RESET request).
	... .1..	RPLLOCK	Stop operation immediately (used with RESET request).
	... ..xx		Reset error lock to unlocked status.
			Reserved bits.
20. RPLOPT7 58 (3A)	xxx.	RPLCNOPT	Option byte 7:
	1... ..	RPLCNALL	Connection option:
			All terminals in OPNDST list must be available before any are connected.
	.1... ..	RPLCNANY	Connect any one terminal in OPNDST list.
	...1... ..	RPLQOPT	Queue the OPNDST request if it cannot be satisfied immediately.
	...0... ..		Reject the OPNDST request if it cannot be satisfied immediately.
	... 1... ..	RPLTPOST	RPL already under PSS.
	... .1..	RPLRLSOP	Schedule the RELREQ exit of the required terminal immediately.
	...1 .0..		Wait for the terminal to become available.
	...0 .0..		Reject the request if the terminal is busy.
	... ..1.	RPLTCRNO	Close in process for PO interface.
	...x.		Reserved bits.

21. RPLOPT8
59 (3B)

1... ..	RPLDACQ
.1... ..	RPLDACP
..1... ..	RPLDPRM
...1... ..	RPLPEND
....1...	RPLSESS
.... .1..	RPLACTV
.... .1.	RPLUNCON
.... ..x	

Option byte 8:

The application requires a specific terminal.

The application will accept any terminal desiring LOGON.

A specific terminal is to be pre-empted, even though another application is holding it (TOLTEP only).

Preempt the terminal after all pending operations are completed (TOLTEP only).

Preempt the terminal after completion of the current dialog session (TOLTEP only).

Preempt the terminal if connected but not busy (TOLTEP only).

Preempt the terminal immediately (TOLTEP only).

Reserved bit.

22. RPLOBSQ
64 (40)

1... ..	RPLOSET
.1... ..	RPLTST
..1... ..	RPLORSET
...1... ..	RPLIGN
....1...	RPLPOS
.... .1..	RPLNEG
.... .1.	RPLINV
.... ..x	

STSN outbound action codes:

Set the outbound sequence number.

Set the outbound sequence number unconditionally, and indicate if acceptable.

Reset the outbound sequence to the default value (0).

Ignore the outbound sequence number. The outbound sequence number is acceptable (following TESTSET).

The outbound sequence number is not acceptable (following TESTSET).

The outbound sequence number is invalid.

Reserved bit.

23. RPLBSQ
65 (41)

1... ..	RPLSET
.1... ..	RPLTST
..1... ..	RPLRSET
...1... ..	RPLIGN
....1...	RPLPOS
.... .1..	RPLNEG
.... .1.	RPLINV
.... ..x	

STSN inbound action codes:

Set the inbound sequence number.

Set the inbound sequence number unconditionally, and indicate if acceptable.

Reset the inbound sequence to the default value (0).

Ignore the inbound sequence number. The inbound sequence number is acceptable (following TESTSET).

The inbound sequence number is not acceptable (following TESTSET).

The inbound sequence number is invalid.

Reserved bit.

24. RPLEXTD1
68 (44)

1... ..	RPLEXSCH
.1... ..	RPLNEXIT
..1... ..	RPLEXIT
.... .1..	RPLNIB
.... .1.	RPLBRANC
....x...x	

Alternate name for RPLEXTDS

(VTAM exit definitions):

An exit has been scheduled.

No exit was specified.

An asynchronous exit was specified.

The RPLARG field contains a pointer to the NIB.

Use a branch entry to the macro.

Reserved bits.

Flag Field	Bit	Mask Name	Meaning
25. RPLSSEI 88 (58)	1... .. .1.. .. ..1. .... ...1 1... .... .xxx	RPLPATHI RPLCPMI RPLSTATI RPLFII RPLRRI	System sense error codes: Path error. Connection point manager error. State error. Function interpreter error. Request reject. Reserved bits.
26. RPLOPT9 96 (60)	1... .. .1.. .. ..1. .... ...1 1... .... .1.. .... .1. .... ...1	RPLLOGON RPLDEVCH RPLTERMS RPLCOUNT RPLAPPST RPLRNNM RPLCIDE RPLTOPL	Option byte 9: Pass the LOGON message to the application. Pass the device characteristics to the application. Pass the symbolic name of the terminal and its characteristics to the application. Pass the number of active connections and queued LOGON requests to the application. Indicate the application status. Indicate the 3705 symbolic name. Indicate the symbolic name corresponding to the communication identifier. Pass the symbolic name of the first terminal on the LOGON queue.
27. RPLOPT10 97 (61)	1... .. .1.. .. ..1. .... ...x xxxx	RPLBSCID RPLDSPLY RPLSPARM	Option byte 10: Pass the hardware identifier of a binary synchronous terminal. Display the information from the network operator. Session parameter. Reserved bits.
28. RPLOPT11 98 (62)	1... .. .1.. .. ..1. .... ...x xxxx	RPLQUIES RPLSTART RPLSTOP	Option byte 11: Stop accepting LOGONs because the application is preparing to shut down (used with SETLOGON). Start accepting LOGONs which were temporarily stopped. Stop accepting LOGONs temporarily (used with SETLOGON). Reserved bits.
29. RPLOPT12 99 (63)	.1.. .. .1.. .. ...1 ........ ...1 x... xxx.	RPLKEEP RPLTRUNC RPLNIBTK RPLFMHDR	Option byte 12: Keep overlength data on input queue. Truncate overlength data. Use KEEP or TRUNCATE option set in NIB at OPNDST. Function management header included in data stream. Reserved bits.
30. RPLSSEO 100 (64)	.1.. .. .1.. .. ...1 1... x... .xxx	RPLCPMO RPLSTATO RPLFIO RPLRRO	System sense error codes: Connection point manager error. State error. Function interpreter error. Request reject. Reserved bits.

Request Queue Element (RQE)

(Created by IEClOQE; pointed to by LCHFTS field in the Logical Channel Word)

0 (0) TSTLNK - address of next RQE		2 (2) TSTUCB - address of UCB	
4 (4) TSTTCB TCB ID	5 (5) TSTIOB - address of associated IOB		
8 (8) TSTPR requester's dispatching priority	9 (9) TSTDEB - address of associated DEB		
12 (C) TSTKEY requester's protection key	13 (D) TSTTCBAD - address of the TCB with which the I/O request is associated		
16 (10) CCW translation flags (see note 1)	TSTHDR TSTHDR - address of header record		
19 (13)			

Note 1:

Flag Field	Bit	Mask Name	Meaning
TSTHDR			CCW translation flags:
16 (10)	1... ..	SUBSYS	Subsystem requester
	.1... ..	REQVIRT	Virtual requester
	..1.	REQ1TO1	Virtual = real requester
	...1	PGSUPVR	Page supervisor is requester
	.... 1...	TRANINPR	Translation in progress
	.... .1..	TRANCOMP	Translation complete
	.... ..1.	FIRST8	First condition code 8 has occurred in CCW translation
	.... ...X		Reserved

Real Storage Page Table Entry (RSPTE)

(The Real Storage Table (RST) contains one RSPTE for each real storage page. Mapped by IHARST; pointed to by PGSRSTP, offset X'4' in PSIA)

0 (0) RSTQFL - real page number	2 (2) RSTQBL - real page number		
4 (4) RSTVPN - number of virtual page that currently resides in a real storage page	6(6) RSTFXCT - fix count		
8 (8) RSTQCD current queue indicator	9 (9) RSTRSTCB- TCB ID for task that was in control when the real storage page was validated	10 (A) RSTFLG status byte (see note 1)	11 (B) RSTPDDT or RSTCPNO (see note 2)
12 (C) Reserved	13 (D) RSTPCB - address of requesting PCB		
15 (F)			

15 (F)

Notes:

- | Flag Field | Bit | Mask Name | Meaning |
|------------|-----------|-----------|---|
| 1. RSTFLG | | | Status of virtual page that owns the associated real page: |
| 10 (A) | 1... | RSTPIN | Page-in. |
| | .1.. | RSTPOUT | Page-out. |
| | ..10 | RSTMPIN | Multiple page-in (PCBE status). |
| | ..11 | RSTFECH | LINK, LOAD, or XCTL assumed (RSPTE). |
| | ...1 | RSTTYPE | RSPTE |
| | ...0 | | PCBE |
| | 1... | RSTIVM | Initial virtual memory page. |
| |1.. | RSTPIOE | Permanent I/O error. |
| |1. | RSTLTF | Long term fix. |
| |1 | RSTICPT | Virtual=real intercept. |
| 2. RSTPDDT | | | paging device assigned to the paging operation, or |
| RSTCPNO | | | channel program number used to accomplish the paging operation. |

STAE Diagnostic Work Area (SDWA)

(Mapped by IHASDWA; pointed to by register 1 upon entry to STAE exit or retry routine)

One basic SDWA format applies to both the STAE exit routine and the STAE retry routine (if specified). The only differences are at locations X'04' (SDWAABCC/SDWAFIOB) and X'64' (SDWAIIOBR). If the STAE user is in supervisor state, bytes X'58'-X'63' differ.

If the STAE user is in problem program state:

0 (0)	SDWAPARM - STAE exit-routine parameter list address, or zero	
4 (4)	SDWAABCC (STAE exit routine)	
SDWACMPF completion code flags (see note 1)	SDWACMPC - bits 0-11: system completion code (packed unsigned decimal)	bits 12-23: user completion code (hexadecimal)
4 (4)	or	
	SDWAFIOB - address of first IOB on restore chain (STAE retry routine)	
8 (8)	SDWACTL1 - PSW at time of ABEND (BC mode)	
16 (10)	SDWACTL2 - last problem program PSW before ABEND (BC mode), or zero (supervisor state routine)	
24 (18)	SDWAGRSV - general registers 0-15 at time of ABEND	
88 (58)	SDWANAME - name of failing program, or zero	

96 (60)	SDWAEPA - entry point address of failing program	
100 (64)	SDWAIIOBR - STAE exit routine: zero STAE retry routine: pointer to address of IOB restore chain (SDWAFIOB, offset X'04')	103 (67)

If the STAE user is in supervisor state:

88 (58)	SDWARBAD - RB address of failing program	
92 (5C)	Zero	
96 (60)	Zero	
100 (64)	SDWAIIOBR - STAE exit routine: zero STAE retry routine: pointer to address of IOB restore chain (SDWAFIOB, offset X'04')	103 (67)

Notes :

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. SDWACMPF			Completion code flags:
4 (4)	1... ..	SDWAREQ	Dump is to be given.
	.1.. ..	SDWASTEP	Job step is to be terminated.
	...1 ..	SDWASTCC	Don't store completion code.
	..x. xxxx		Reserved bits.

System Management Control Area (SMCA)

(Mapped by IEESMCA; pointed to by CVTSMCA - offset X'C4')

The SMCA contains information used by the SMF option. It contains SMFPRMxx options, SYS1.MANX and SYS1.MANY data set descriptions, SMF ECBs, and other information utilized by the SMF modules.

0 (0) SMCAOPT SMFPRMxx options selected at init (see note 1)	1 (1) SMCAMISC miscellaneous indicators (see note 2)	2 (2) SMCATOFF - offset of first SMF TIOT entry from beginning of master scheduler TIOT
4 (4) SMCATIOT - address of master scheduler TIOT		
8 (8) SMCAJWT - job wait time limit in timer units (derived from JWT in SMFPRMxx). For extended timer support, 1 timer unit = 2 ²⁰ microseconds (1.048576 seconds). A standard timer unit = 26.04166 microseconds.		
12 (C) At IPL: SMCABUF - SMF buffer size After IPL: SMCABSIZ - buffer working size		
16 (10) SMCASID - system identification		
20 (14) SMCABUFP - address of SMF buffer		

Description of Currently Used SMF Data Set:

These fields describe the primary or alternate data set, whichever is currently being written.

24 (18) SMCAPDEV - volume serial number		
	30 (1E) SMCAPSTA device status (see note 3)	31 (1F) SMCAPDAR - device address (3 printable characters)
SMCAPDAR continued	34 (22) SMCAPLBL primary label status (see note 4)	35 (23) SMCAXORY - data set to receive entry (EBCDIC X or Y)
36 (24) SMCAPDCB - address of DCB for current SMF data set		
39 (27)		

Description of SMF Data Set Not Currently in Use:

40 (28) SMCAADEV - volume serial number		
	46 (2E) SMCASTA device status (see note 5)	47 (2F) SMCAADAR device address (3 printable characters)
SMCAADAR continued	50 (32) SMCAALBL label status (see note 6)	51 (33) SMCAYORX - data set to receive entry (EBCDIC X or Y)
52 (34) SMCAADCB - address of DCB for noncurrent SMF data set		
55 (37)		

SMF ECBs

56 (38) SMCAWECB - SMF writer ECB (set by IGC0008C when WRITE request)	
60 (3C) SMCABECB - ECB for SMF buffer	
64 (40) SMCASGWR - number of buffer loads required for record (if record exceeds 1/2 of buffer size)	
68 (44) SMCASGFT - number of record segments (buffer loads) that will fit in data set	
71 (47)	

Miscellaneous Pointers and Communication Areas

72 (48) SMCAWAIT - accumulated wait time, in timer units for systems with Standard Timer Support and in microseconds for systems with Extended Timer Support			
80 (50) SMCAENDI X'00' = data set found; X'01' = data set not found	SMCAENTY SMCAENOP - which load of SVC 83 passed control to current load	82 (52) SMCAFOPT reserved	83 (53) SMCAENAL reserved

84 (54)

SMCAWRTP - optimum buffer load displacement figure (when buffer is full, data is written to SMF data set)

87 (57)

XCTL Remote List (used by SVC 83)

88 (58)

SMCAXCTL - address of name of routine to which XCTL passes control

92 (5C)

DCB address (always zero)

96 (60)

SMCAXNAM - name of routine to which XCTL is to pass control

104 (68)

SMCASWA
indicator byte
(see note 7)

105 (69)

SMCASWB
reserved

106 (6A)

SMCASWC
reserved

107 (6B)

SMCASWD
reserved

108 (6C)

SMCADSTM - time and date data sets are full - no data recorded after this time (form 00yydddf)

116 (74)

SMCADSCT - number of SMF records not recorded on the data set

120 (78)

SMCAPOST - reserved

131 (83)

132 (84)

SMCATEXP - time of most recent expiration of a 10-minute TQE

136 (88)

SMCAPGIN - number of page-ins performed

140 (8C)

SMCAPGOT - number of page-outs performed

144 (90)	SMCAPGRL - number of pages reclaimed (page awaiting page-out is used, so that a page does not need to be retrieved from auxiliary storage)	
148 (94)	reserved	
		167 (A7)
168 (A8)	SMCAU83 - address of SMF output exit (IEFU83) taken when records are written to an SMF data set	
		171 (A8)

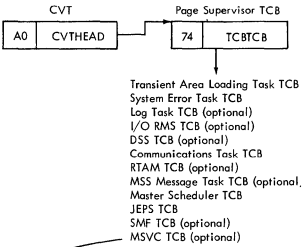
Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. SMCAOPT 0 (0)	1... ..	SMCAOPT1	SMFPRMxx background options selected at initialization time:
	.1... ..	SMCAOPT2	Job accounting.
	..1... ..	SMCAEXT	Step accounting.
	...1... ..	SMCADSA	User exits will be taken.
	....1... ..	SMCAVOL	Data set accounting.
	....1... ..	SMCATDS	Volume accounting.
	....1... ..	SMCATDS	Type 17 records maintained for temporary data sets (REC=2 or 3).
	....0	SMCAFGND	Always set to zero to indicate background options.
	....x..		Reserved bit.
2. SMCAMISC 1 (1)	x... ..	SMCAUSER	Miscellaneous indicators:
	.x... ..	SMCAMAN	Type of SMF recording requested:
	00... ..		SYS1.MAN data set is/is not present:
	01... ..		No SMF recording requested (MAN=NONE).
			Only user records are to be recorded (MAN=USER).
	10... ..		Invalid combination.
	11... ..		SMF and user recording requested (MAN=ALL).
	..x... ..	SMCAOPI	Not supported by OS/VS1.
	...1... ..	SMCAFIRT	SMF data set to be opened.
	....1... ..	SMCAPSPD	Pseudodump (device switching only)
	....1... ..	SMCADBSY	Dump is busy (SMF writer).
	....1... ..	SMCABSW	Right half of buffer is in use.
	....0... ..		Left half of buffer is in use.
	....1... ..	SMCADUMP	Dump is busy.
3. SMCAPSTA 30 (1E)	1... ..	SMCAPNAV	Primary SMF data set device status:
	..1... ..	SMCAPDA	Data set not available for recording.
	...1... ..	SMCAPMTY	This is a direct access device.
	....1... ..	SMCAMOD	The data set is empty.
	....1... ..	SMCAPUNT	Open module.
	....1... ..	SMCAPVOL	Device address is defined at system initialization.
	....1... ..		Volume serial number is defined at system initialization.
	....x... ..		Reserved bits.

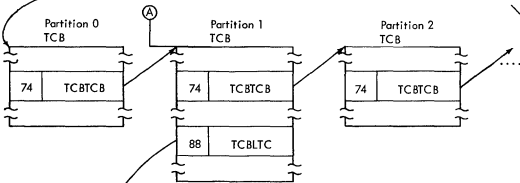
4.	SMCAPLBL 34 (22)	.... .1.. .... .1.. .... .1.. xxxx x...	SMCAPNSL SMCAPSL SMCAPNL	Label status of the primary SMF data set: Nonstandard label (NSL). Standard label (SL). No label (NL). Reserved bits.
5.	SMCASTA 46 (2E)	1... .. ..1. .... .... .1.. .... .1.. .... .1.. ..x.x xx..		Alternate SMF data set device status: Data set is not available for recording. This is a direct access device. Device address is defined at system initialization. Volume serial number is defined at system initialization. Reserved bits.
6.	SMCAALBL 50 (32)	.... .1.. .... .1.. .... .1.. xxxx x...		Label status of the alternate SMF data set: Nonstandard label (NSL). Standard label (SL). No label (NL). Reserved bits.
7.	SMCASWA 104 (68)	.1.. .... ..1. .... ...1 1.. .... .1.. .... .1.. .... .1.. .... .1.. x... ..	SMCADSTR SMCAOPFL SMCANADA SMCANAVL SMCAZEOD SMCADSSP SMCADSSW	Indicator bits: Both data sets are full; SMF is not recording. OPEN failure on SMF data set; SMF is not recording. Next allocation must be for a direct access device. Allocation search is by volume serial number. SMF halt end-of-day processing. Entry to the writer is for a space check of the data set. Entry to the writer is for data set switching. Reserved bit.

Task Control Block (TCB)

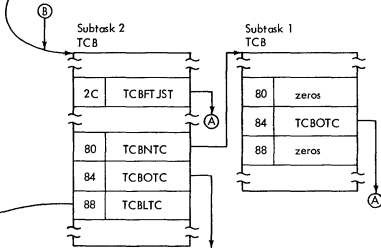
HOW TO FIND A TCB



System
Tasks

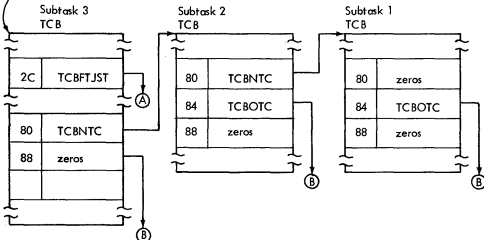


Level 1 Subtasks



Problem
Program
Tasks

Level 2 Subtasks



TASK CONTROL BLOCK

(mapped by IKJTCB LIST=YES, SYS=AOS1)

-32 (-20)		TCBFRS - floating-point register save area	
		-1 (-1)	
0 (0)		TCBRBP - address of the RB for the executing program	
4 (4) TCBPMASK X'0F'=SPIE has been initiated	TCBPIE	TCBPIEA - address of SPIE control area, the first word of which contains the PIE address	
8 (8)		TCBDEB - address of the DEB queue	
12 (C)		TCBTIO - address of the task I/O table (TIOT)	
16 (10) TCBCMPF indicator flags (see note 1)	TCBCMP	TCBCMPC - system completion code (bits 0-11), and user completion code (bits 12-23)	
20 (14) TCBABF flag byte (see note 2)	TCBTRN	TCBTRNB - not supported by OS/VS1	
24 (18) TCBRSV03 reserved	TCBMSS	TCBMSSB - address of boundary box (job step TCB), or - address of GQE (subtask TCB, if system has issued a GETMAIN for the space)	
28 (1C) TCBPKF bits 0-3 contain storage protection key; bits 4-7 are reserved.	29 (1D)	TCBFLGS - flag byte fields (see note 3)	
		34 (22) TCBLMP - no. of resources for which this task is enqueued	35 (23) TCBDSP dispatching priority for this task
36 (24)	TCBLLS - address of the prefix of the most recently added request block (RB-8) on the list of programs loaded via the LOAD macro instruction		
40 (28)	TCBJLB - address of a JOBLIB DCB		

44 (2C)	TCBFTJST - address of job step TCB	
48 (30)	TCBGRS - general register save area (registers 10 - 15 and 0 - 9)	
	111 (6F)	
112 (70) TCBIDF TCB identifier	TCBFSA	TCBFSAB - address of first problem program save area
116 (74)	TCBTCB - address of next TCB of lower priority on the ready queue	
120 (78) X'80' = real/ wait TQE; X'00' = task type TQE	TCBTME	address of timer queue element (TQE)
124 (7C) TCBPIBT partition type (see note 4)	TCBPIB	TCBPIBA - address of partition information block (PIB)
128 (80)	TCBNTC - address of TCB for the task previously attached by the task that attached this task	
132 (84)	TCBOTC - address of the TCB for the task that attached this task (field equals zero in TCB for a system task)	
136 (88)	TCBLTC - address of the TCB for the task last attached by this task (see note 5)	
140 (8C)	TCBIQE - address of an interruption queue element for scheduling the ETXR routine of the task that attached this task	
144 (90)	TCBECB - address of the ECB that will be posted by the supervisor task termination routines when normal or abnormal termination occurs	
148 (94)	Reserved	

152 (98) TCBFTLMP task's limit priority	153 (99) TCBFTFLG - ABEND flags (see note 6)
156 (9C) TCBDDRTI - amount of time remaining in task's dynamic dispatching time slice	
160 (A0) TCBNSTAE STAE flags (see note 7)	TCBSTAB TCBSTABB - address of current STAE control block
164 (A4) TCBTCTGF TCT flags (see note 8)	TCBTCT TCBTCTB - address of timing control table (TCT) if SMF is in the system
168 (A8) TCBUSER - a field available to the installation	
172 (AC) TCBNDSP - secondary nondispatchability flags (see note 9)	
176 (B0) TCBMDIDS - reserved	
180 (B4) TCBRECDE ABEND recursion (see note 10)	TCBJSCB TCBJSCBB - address of JSCB
184 (B8) TCBDDEXC - no. of times a dynamic dispatching task has had its time slice expire	186 (BA) TCBDDWTC - no. of times a dynamic dispatching task is not interrupted by end of time slice between waits
188 (BC) TCBIOBRC - address of IOB restore chain for I/O quiesced by EOT	
192 (C0) TCBRVS30 - reserved	
196 (C4) TCBEXT1 - address of OS - VS common extension	

OS/VS1 - OS/VS2 Common Section

200 (C8) TCBNDSP4 reserved	TCBBITS		
	TCBNDSP5 nondispatch- ability flags (see note 11)	TCBFLG56 task flags (see note 12)	TCBFLG57 task flags (see note 13)
204 (CC) TCBDAR DAR flags (see note 14)	205 (CD) TCBRVS37 reserved	206 (CE) TCBSYSCT - no. of outstanding system-must-com- plete requests	207 (CF) TCBSTMCT - no. of outstanding step-must-complete requests
208 (D0) TCBRVS39 reserved	TCBEXT2 TCBEXT2A - Address of OS/VS1 - OS/VS2 Common Extension		

OS/VS1 TCB Overlay

212 (D4)	TCBPCB - address of page control block (PCB) for this task		
216 (D8)	TCBGQE - address of first gotten queue element (GQE) for this task		
220 (DC) TCBRVS85 reserved	TCBARB TCBARBA - address of available SVRB		
224 (E0) X'80' = job step TQE is on queue headed by TCBTQE	TCBTTQE Address of queue of TQEs for CPU (task) timing for this task		
228 (E4) TCBSVCA1 - SVC to be used for SVC screening	229 (E5) TCBRV186 - reserved		

OS/VS1 - OS/VS2 Common Extension (Pointed to by TCBEXT2, offset X'D0')

0 (0) TCBTFLG GTF flag byte (see note 15)	TCBG TF TCBG TFA - address of GTF temporary trace buffer
4 (4) TCBRSVAB reserved	(5 (5) TCBRCMP - most recent ABEND completion code (including valid recursions in STAE)
8 (8)	TCBEVENT - address of EVENTS table
12 (C)	Reserved

15 (F)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. TCBCMP 16 (10)	1... ..	TCBCREQ	<p>ABEND flags:</p> <p>A dump has been requested.</p> <p>A step ABEND has been requested.</p> <p>Some problem program storage was overlaid by the second load of ABEND. (A first load overlay is indicated in TCBFLLGS, offset X'1D'.)</p> <p>Completion code is not to be stored in TCBCMPC (offset X'11') if an ABEND is encountered. This is to prevent an overlay of the original completion code.</p> <p>A double ABEND has occurred.</p> <p>A dump message (WTO) is to be issued to the operator.</p> <p>ABEND is to produce an indicative dump.</p> <p>An ABEND message is provided that may be printed by ABDUMP.</p>
	.1.. ..	TCBCSTEP	
	..1.	TCBCPP	
	...1	TCBSTCC	
	.... 1...	TCBCDBL
	.... .1..	TCBCWTO
	.... ..1.	TCBCIND
	.... ...1	TCBCMSG
2. TCBA BF 20 (14)	.1..	TCBNOCHK	<p>Flag byte:</p> <p>Suppresses taking checkpoints for this step (job step TCB).</p> <p>Job step TCB: This is a graphics foreground job or the graphic job processor.</p> <p>OLTEP functions require cleanup before abnormal termination can be invoked.</p> <p>Reserved bits.</p>
	..1.	TCBGRPH	
	.... ..1.	TCBOLTEP
	x..x xx.x		
3. TCBFLLGS Byte 1 29 (1D)	1...	TCBFA	<p>Flag byte:</p> <p>Abnormal termination in progress.</p> <p>Normal termination in progress.</p> <p>ABEND was initiated by the resident abnormal termination routine.</p> <p>Job step timer expired during job step ABEND processing. STAE exits are not allowed.</p> <p>This task is using the dump area to store part of the problem program to provide the job step with enough storage for obtaining a dump.</p> <p>SVC second level interrupt handler requests SVRB storage for ABEND.</p> <p>Problem program storage has been overlaid to process ABEND.</p> <p>Prohibit queueing of asynchronous exits for this task.</p>
	.1..	TCBFE	
	..1.	TCBARTRM	
	...1	TCBJSTE	
	.... 1...	TCBDMPA
	.... .1..	TCBPOOL
	.... ..1.	TCBFS
	.... ...1	TCBFX
Byte 2 30 (1E)	1...	TCBSYSTK	
	...1	TCBFSMC	
	.... 1...	TCBFJMC
	.... ..1.	TCBFETXR
	.... ...1	TCBFTS
	..xx. .x..		
Byte 3 31 (1F)	..1.	TCBSYSER	<p>Exit effector: System error routines already operating for this task.</p> <p>Floating-point registers exist.</p> <p>Scheduler has abnormally ended, ABEND processing is complete, and the scheduler has been reentered.</p> <p>XCTL routine is changing the storage protection key in the PSW from zero to the one used by the problem program.</p> <p>Reserved bits.</p>
	.... 1...	TCBFLREG
	.... .1..	TCBSCHAB
	.... ..1.	TCBPKCHG
	xx.x ...x		

Byte 4
32 (20)

Reserved

Byte 5
33 (21)

.1.. TCBUXNDF

If any bit in this byte is set to 1, the task is nondispatchable.

..1. TCBPAGE

Task is temporarily nondispatchable because SMF time limit or SYSOUT limit user exit routine is being executed for this step. This bit is set to 1 in all TCBs except job step TCB. Task is nondispatchable due to excessive paging rate.

...1 TCBANDSP

Task is temporarily nondispatchable because it was attached under the DISP=NO operand. Another task is in "system-must-complete" status.

.... 1... TCBSYS

Another task in this job step is in "step-must-complete" status.

.... .1.. TCBSTP

Primary nondispatchability bit. This bit is set to 1 if any of the secondary nondispatchability bits (offset X'AD' - X'AF') are set to 1. This bit is set to 0 if a secondary nondispatchability bit is set to 0 and all other secondary nondispatchability bits are 0.

.... ...1 TCBPNDSP

Reserved bits.

x... ..x.

4. TCBP|BT
124 (7C)

11.. TCBPP

Partition flags.

..1. TCBSIZE

Processing program partition.

...1 TCBSTOP

Large partition.

.... .1.1 TCBSCHTI

CPU timing stopped by FINCH until transient is loaded.

.... ..1. TCBWRITE

Scheduler has set TCBTIO, offset X'C', to point to the initiator's TIOT.

.... ...1 TCBSCHEd

Indicates to ABEND that this is a reader or writer task.

.... ...0

Scheduler in control.

.... x...

TIOT written on SYSJOBQE (used by ABEND).

Reserved bit.

5. If a task (the originating task) has attached other tasks, the TCBs for the other tasks are on the subtask queue of the originating task. TCB|TC in the TCB for the originating task points to the last TCB (the TCB for the last attached task) in the subtask queue. In each TCB on the subtask queue, except the first TCB, TCBNTC points to the preceding TCB on the queue.

6. TCBFTFLG

ABEND flags.

Byte 1

1... TCBTCAM

This TCB structure is using TCAM (job-step task TCB only).

TCBFTFL1

.1.. TCBVTAM

This TCB structure is using VTAM (job-step task TCB only).

153 (99)

..1. TCBRWTOR

This task has issued a WTOR to a remote workstation.

.... .1.. TCBFTTOP

This is the top task in a tree of abnormally terminated tasks.

.... ..1. TCBFTCOM

Abnormal termination dump complete.

.... ...1 TCBENQ

Task enqueued on dump data set.

...x x... Reserved bits.

Byte 2

.1. TCBDDEN

High-density dump, double density line (64 bytes wide).

TCBFTFL2

...1 TCB|PAGE

Long page (80 lines per page).

154 (9A)

.... .1.. TCBFDSOP

SYSABEND or SYSUDUMP data set has been opened for the job step.

.... ..1. TCB|SYSAB

SYSABEND data set in use.

.... ..0.

SYSUDUMP data set in use.

xx.. x..x Reserved bits.

Byte 3

.... .1.. TCBFTDUM

No abnormal termination dump (SYSABEND or SYSUDUMP) can be provided for this job. Reserved bits.

TCBFTFL3

xxxx x..x

7. TCBNSTAE 160 (A0)	1... ..	TCBSTABE	STAE flags: ABEND entered because of error in STAE processing.
	.1... ..	TCBQUIES	STAE invoked purge I/O routine with quiesce I/O option.
	..1... ..	TCBXCTL	Current SCB has XCTL=YES option.
	...1... ..	TCBSCAT	SCB was created by a program that was scatter loaded.
	....1...	TCBHALT	Purge I/O routine did not successfully quiesce I/O, but I/O was halted.
	....1..	TCBSUPER	Program using STAE is in supervisor state.
	....1.	TCBRETRY	STAE user requested that a retry routine be scheduled but that the RB chain not be purged.
	....1	TCBVALID	Retry routine and parameter list addresses are valid.
8. TCBCTGTF 164 (A4)	1... ..	TCBSMFGF	TCT flag byte: TCT Storage Table is to be updated by GETMAIN/FREEMAIN.
	..xxx xxxx		Reserved bits.
9. TCBNDSP 172 (AC)			Secondary nondispatchability bits. If any bit in these bytes is 1, the primary nondispatchability bit (offset X'21.7') is 1, and the task is nondispatchable.
Byte 1 172 (AC)			Reserved
Byte 2 173 (AD)	xx... ..		Damage assessment routine bits:
	10... ..	TCBDARTN	The task is temporarily nondispatchable.
	01... ..	TCBDARPN	The task is permanently nondispatchable.
	...x x...		Recovery management support and system error recovery flags:
	..10... ..	TCBRSTND	The task is temporarily nondispatchable.
	..11... ..	TCBRSPND	The task is permanently nondispatchable.
	....1...	TCBDDRND	Task is in device allocation and dynamic device reconfiguration (DDR) has made it nondispatchable.
	....1..	TCBTSPSP	Dispatching of a TCAM task must be delayed until TCAM I/O appendage or SVC routine has completed execution.
	....1.	TCBPIEND	SRB is to be scheduled to perform PIE/PICA processing (FLIH).
	....x		Reserved bit.
Byte 3 174 (AE)	1... ..	TCBABD	ABDUMP is processing.
	.1... ..	TCBSTPP	Task set nondispatchable for SETTASK.
	..1... ..	TCBNDSVC	This task is nondispatchable because SVC dump is executing for another task.
	...1... ..	TCBNDSVS	Task is nondispatchable because it is being swapped out.
	....1...	TCBIWAIT	Task is nondispatchable due to an input wait.
	....1..	TCBOWAIT	Task is nondispatchable due to an output wait.
	....1.	TCBDSS	Dynamic Support System (DSS) has set this task nondispatchable.
	....1	TCBABE	ABEND routine was entered by this task while the DCB for SYSABEND or SYSUDUMP data set was being opened by another task.
Byte 4 175 (AF)	1... ..	TCBTERM	Task has been terminated.
	.1... ..	TCBABTER	Task is to be terminated by ABEND.
	..1... ..	TCBNDSDA	Temporarily nondispatchable; partition is deactivated.
	...x xxxx		Reserved bits.

Notes:

Flag Field	Bit	Mask Name	Meaning
10. TCBRECDE 180 (B4)	1... ..	TCBREC	ABEND recursion byte: Valid reentry to ABEND if nonzero value in following seven bits.
	.1..	TCBMCCNS	"Must-complete" task has abnormally terminated without enough storage for two RBs for a WTOR asking whether the task's resources are critical. The resources are assumed to be critical, and the partition is marked permanently nondispatchable.
	..1.	TCBWTPE	WTP failed. Job-step timer failed during job-step ABEND, and the STAE exit is denied. (Not for APF TERM=YES.)
	..11	TCBNOSTA	STAE not to be honored.
	..11 ...1	TCBSTRET	Return from dump processing.
	..11 ...1	TCBCONVR	Convert to step ABEND.
	..11 ..11	TCBDARET	Return from damage assessment routine.
	..11 ..1..	TCBTYP1R	Return from Type-1 message module.
	..11 ..1.1	TCBNEWRB	ABEND issued SVC 13 in order to transfer control to a non-ABEND module.
	..1. ...1	TCBVTAM1	ABEND is entering first VTAM interface (ISTRAAA1) for termination of a task or subtask.
	..1. ...1	TCBVTAM2	ABEND is entering second VTAM interface (ISTRAAA2) because first VTAM interface (ISTRAAA1) abended.
	..1. ...11	TCBVTAM3	ABEND is entering first VTAM interface ISTRAAA0 because VTAM abended.
	..1. ..1..	TCBVTAM4	ABEND is entering second VTAM interface ISTRAAA2 because ISTRAAA0 abended.
	...1	TCBTYP1W	Type-1 WTP.
	.... 1..1	TCBMESG	Message recursion.
	.... 1..1	TCBDYNAM	DD-Dynamic TIOT cleanup.
	.... 1..1	TCBDAMSG	ABEND is issuing a WTOR asking whether this job step task should wait for the dump area.
	.... 11.1	TCBTCAMP	Purge TCAM interpartition posts.
	.... 111.	TCBINDRC	Indicative dump (load 8 of ABEND) has abended. ABEND will handle this condition.
	.... 1111	TCBSAVCD	ASIR recursion. Save old completion code.
	.... ..1.1	TCBGREC	Graphics.
	.... ..111	TCBADUMP	ABDUMP.
	.... ...1.	TCBCLOSD	Close direct SYSOUT on tape.
	.... ...11	TCBCLOSE	Close open data sets.
	.... ....1	TCBOPEN	Open dump data set.
11. TCBNDSP5 201 (C9)	1...	TCBNDSP5	Secondary nondispatchability flags: The task is nondispatchable because the supervisor lock is set (set by paging service interface routine when disabled code produces a page fault or requests a page fix).
	.1..	TCBNDG TF	This task is nondispatchable, waiting for a TIRB routine to process a page fault in disabled code produced by G TF.
	..xx xxxx		Reserved bits.

Notes:

Flag Field	Bit	Mask Name	Meaning
12. TCBFLGS6 202 (CA)	1... ..	TCBRV	Task-related flags: The partition is fixed in real storage. Virtual addresses are equal to real addresses.
	.1.. ..	TCBPIE17	This task requests execution of a SPIE when a page fault occurs.
	..1.	TCPANIC	This task has, or is waiting for, an emergency work area.
	...1	TCBFPROT	This task has specified fetch protection (key-0 users only).
	.... 1...	TCBRUNPN	Partition not eligible for deactivation.
	.... .1..	TCBRUNJB	Partition is not eligible for deactivation while current job is running.
	.... ..1.	TCBDSINQ	Scheduler is using enqueued data set integrity logic at job start time.
	.... ...1	TCBSTIJS	Partition not eligible for deactivation. STIMER request is for job step timing.
13. TCBFLGS7 203 (CB)	1... ..	TCBFDD	Flags: This TCB is a member of the dynamic dispatching group.
	.1.. ..	TCBFDDT	I/O-bound (dynamic dispatching).
	.0.. ..		CPU-bound (dynamic dispatching).
	..1.	TCBFDDEI	Time slice for this task has expired since it last issued a WAIT.
	...1	TCBFWDD	This TCB was formerly a member of the dynamic dispatching group.
	.... 1...	TCBSVCS	SVC screening is active for this task.
	.... ...1	TCBGTOFM	GTF tracing has been temporarily disabled under this task.
	.... .xx.		Reserved bits.
14. TCBDAR 204 (CC)	1... ..	TCBDARP	Damage Assessment Routine (DAR) flags: DAR recursion: DAR has been entered for this task.
	.1.. ..	TCBDARS	Task reinstatement has been attempted: If DAR is reentered, this task will be set nondispatchable.
	..1.	TCBDARD	A dump has been requested for a writer or scheduler ABEND, and the user has provided no SYSABEND DD card.
	...1	TCBDARMC	DAR has been entered to handle a valid recursion in "must-complete" status through ABEND.
	.... 1...	TCBDARO	System error task is failing. DAR dump should not request ERP.
	.... .1..	TCBDARWT	A WTO operation with a "reinstatement failure" message is in process for DAR.
	.... ..1.	TCBDARMS	A WTO operation with a "DAR dump in progress" message is now in process for DAR.
	.... ...1	TCBEXSVC	The DUMP SVC routine is executing for this task.
15. TCBFLG 0 (0)	1... ..	TCBASYN	Generalized Trace Facility (GTF) flags: GTF asynchronous gather routine is in control.
	.1.. ..	TCBERRTN	GTF asynchronous gather error routine is in control.
	..1.	TCBDSPIP	Machine check interruption handler should unconditionally branch to the dispatcher.
	...x xxxx		Reserved bits.

Timing Control Table (TCT)

(Mapped by IEFTCT; pointed to by TCBTCT, offset X'A4')

The TCT contains information used by SMF. It is composed of the:

- TCT proper (data fields and storage tables), and
- TCT I/O table (I/O Lookup Table and I/O Counter Table)

0 (0)	TCTQA - queue address of TCT	3 (3)	TCTSW - TQE contains step time (X'00') or job time (X'80')
4 (4)	TCTTCB - address of initiator TCB		
8 (8)	TCTCRTBL - address of TCT storage table		
12 (C)	TCTIOTBL - address of TCT I/O Table (not necessarily contiguous with TCT)		
16 (10)	TCT subpool number	TCTPOOL	TCTSIZE - TCT size (halfword boundary)
20 (14)	TCTUTL - zero		
24 (18)	TCTUDATA - address of one-word parameter list that points to job management record (JMR)		
28 (1C)	TCTJMR - address of job management record		
32 (20)	TCTRSV08 - reserved		
36 (24)	TCTSTOF - overflow field for user-supplied step time extensions		
40 (28)	TCTSACT - running total of user-supplied step time extensions in timer units. For extended timer support, 1 timer unit = 2^{20} microseconds (1.048576 seconds). A standard timer unit = 26.04166 microseconds.		
44 (2C)	TCTWLMT - maximum job/step wait time limit as specified in SMFPRMxx in timer units. For extended timer support, 1 timer unit = 220 microseconds (1.048576 seconds). A standard timer unit = 26.04166 microseconds.		

48 (30)	TCTLIN - reserved
52 (34)	TCTLOUT - reserved
56 (38)	TCTAST - time of day that device allocation started (to nearest 1/100th of a second)
60 (3C)	TCTPPST - time of day that problem program was loaded (to nearest 1/100th of a second)
64 (40)	reserved
79 (4F)	

Processor Storage Table

0 (0)	TCTLWM - highest address allocated from bottom of region	
4 (4)	TCTHWM - lowest address allocated from top of region	
8 (8)	TCTMINC - minimum difference between TCTLWM and TCTHWM(2K blocks)	10 (A) TCTRSZ - region request (2K blocks)
12 (C)	TCTRBA - reserved	
16 (10)	Hierarchy Support Storage Table - set to zero (not supported)	
		31 (1F)

TCT I/O TABLE

(Pointed to by TCTIOTBL, offset X'0C'; not necessarily contiguous to TCT.)

TCT I/O Lookup Table

0 (0)	TCTPLEXT	
subpool number in which TCT I/O Table resides		TCTSZEEXT - length of TCT I/O Table (halfword boundary)
4 (4)	TCTSZLKP - number of device entries in TCT I/O Lookup Table times 8	6 (6) TCTRSV11 - reserved
		7 (7)

DD Lookup Table Entry

(The first four bytes of the DD Lookup Table Entry are repeated for each DD entry in the TIOT. TCTDCBLE appears only at the end of these entries. There are no entries for SYSIN and SYSOUT.)

0 (0)	TCTDCBTD - offset to DD entry in TIOT	2 (2)	TCTIOTSD - offset for DD entry in TCT I/O Counter Table
n	TCTDCBLE - end of TCT I/O Lookup Table (zeros)		

TCT I/O COUNTER TABLE

(There is one 8-byte device entry for each UCB associated with a DD statement. There is one output limit extension for each DD statement. The device entries for a given DD statement are grouped together, followed by the output limit extension for that statement. This series of entries is repeated for each DD entry in the TIOT. There are no entries for SYSIN or SYSOUT.)

Device Entry

0 (0)	TCTUCBP - address of UCB for this device	2 (2)	TCTSCTR - no. of UCB entries	3 (3)	TCTFLGS flag byte (see note 1)
4 (4)	TCTDCTR - counter for EXCPs issued against this UCB				7 (7)

Output Limit Extension

0 (0)	TCTRSV10 - reserved				
4 (4)	TCTEXRLD - no. of extents released by DADSM (SPACE= RLSE)	5 (5)	TCTTKRLD - number of tracks released by DADSM (SPACE=RLSE)		
					7 (7)

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. TCTFLGS 3 (3)	1...	TCTDDIND	Flag byte: End of concatenated DD string.
	.1..	TCTVAMDS	VIO data set entry. TCTUCBP (offset X'0') is set to zero.
	..1.	TCTNOCNT	Do not count the EXCP.
	...x xxxx	Reserved bits.	

Task I/O Table (TIOT)

(Mapped by IEFTIOT1; pointed to by TCBTIO, offset X'C' in the TCB)

The TIOT is built by job management and resides in the higher portion of the dynamic area during step execution. It provides pointers to JFCBs and allocated devices for I/O support routines.

0 (0)	TIOCNJOB - job name	7 (7)
8 (8)	TIOCTEST - job step name, followed by 8 reserved bytes (for job step that is not a procedure step), or - procedure step name, followed by job step name (for job step that is a procedure step)	23 (17)

DD Entry

There is a 16-byte DD entry for each DD statement in the step.

0 (0) TIOELNGH length, in bytes, of this DD entry	1 (1) TIOESTTA status byte (see note 1)	2 (2) TIOEWCT number of devices requested for data set	TIOERLOC TIOELINK flag byte (see note 2)
4 (4)	TIOEDDNM - DD name		
12 (C)	TIOEJFCB - relative track address (TTR) of JFCB (or SIOT, during allocation)		15 (F) TIOESTTC allocation status byte (see note 3)

Device Entry

During allocation: 1 entry for each device required, or for each public device eligible

During problem program: 1 entry for each allocated device

0 (0) TIOESTTB status byte (see note 4)	1 (1) TIOEFSRT -(see note 5)
--	---------------------------------

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. TIOESTTA 1 (1)	x... x... 0... 0... 0... 1... 1... 0... .1...		Status byte A: Tape label processing to be performed: NL, BLP SL, SUI NSL
		TIOSPLTP	During allocation: Split cylinder primary (first DD entry for a split cylinder). During step termination: No deallocation necessary.
	.1.	TIOSPLTS	During allocation: Split cylinder secondary (not the first DD entry for a split cylinder). During step termination: Rewind but no unloading.
	...1	TIOSJBLB	JOBLIB indicator.
	... 1...	TIOSDADS	DADSM allocation necessary.
	... 1..	TIOSDSP1	Tape data sets: rewind/unload the volume.
	... ..1	TIOSDSP2	Tape data sets: rewind the tape volume. Direct access data sets: public volume.
2. TIOELINK 3 (3)			During allocation: Link to the appropriate prime split, unit affinity, volume affinity, or suballocate TIOT entry.
	1...	TIOSYOUT	After CLOSE: This is a SYSOUT data set that contains data.
	...1	TIOTTERM	Device is a terminal.
	...1	TIOEDYNM	DYNAM coded on DD statement.
	... 1...	TIOEQNAM	QNAME coded on DD statement.
	... 1..	TIOESYIN	Spooled SYSIN data set.
	... ..1	TIOESYOT	Spooled SYSOUT data set.
	... ..1	TIOTREM	Remote device.
	.x...		Reserved bit.
3. TIOESTTC 15 (F)			Status byte C - used during allocation only and set to zeros at the end of allocation.
	1...	TIOSDKCR	Virtual storage or DASD address.
	.1...	TIOSDEFR	Deferred mount.
	..1.	TIOSAFFP	Primary unit affinity.
	...1	TIOSAFFS	Secondary unit affinity.
	... 1...	TIOSVOLP	Primary volume affinity.
	... 1..	TIOSVOLS	Secondary volume affinity.
	... ..1	TIOSBALP	Primary suballocate.
	... ..1	TIOSBALS	Secondary suballocate.

<u>Flag</u> <u>Field</u>	<u>Bit</u>	<u>Mask</u> <u>Name</u>	<u>Meaning</u>
4. TIOESTTB 0 (0)			Status byte B: During allocation and during problem program:
	1... ..	TIOSUSED	Data set is on device.
	.1.. ..	TIOSREQD	Data set uses device.
	..1. ..	TIOSPVIO	Device violates separation.
	...1	TIOSVLSR	Volume serial present.
	.... 1...	TIOSSETU	Setup message required.
	.... .x..	TIOSMNTD	Disposition:
	.... .1..		Retain unloaded volume if unload required.
	.... .0..		Delete unloaded volume if unload required.
	.... .1.	TIOSUNLD	Unload required.
	.... ...1	TIOSVERF	Verification required.
5. TIOEFSRT 1 (1)	Bits 0 - 11:		During allocation: Offset, in the UCB look-up table, to an address for a device required or eligible for this data set.
	Bits 12 - 23:		Offset, in the step volume table (VOLT), to the volume serial number for the volume required or eligible for this data set.
			During problem program: Address of the UCB.

Timer Queue Element (TQE)

(Mapped by IHATQE1, TYPE=STD or EXT; pointed to by TCBTME, offset X'78' in the TCB)

TQE with Standard Timer

0 (0)	TQETCB	TQETCBA - address of TCB
TQEFLGS flag byte (see note 1)		
4 (4)	TQEFLNK - address of next TQE	
8 (8)	TQEBLNK - address of previous TQE	
12 (C)	TQEVAL - time of expiration/time remaining	
16 (10)	TQELHPSW - first word of current PSW (when TQE serves as IRB)	
20 (14)	TQESAV - job step time save area	
24 (18)	TQESADDR - address of processing program save area	
28 (1C)	TQEEXIT - address of timer asynchronous exit routine	
32 (20)	TQEWORk - work area	
36 (24) X'80' =synchronized TQE	37 (25)	TQEGRS - register save area (when TQE serves as IRB)
		99 (63)
100 (64)	TQEECB - interruption queue element (when TQE serves as IRB)	
		115 (73)

116 (74)

TQEIQE - ECB when WAIT parameter is specified in STIMER

Note 1:

Flag Field	Bit	Mask Name	Meaning
TQEFLGS	1... ..11	TQENIU	Element is not in use.
1 (1)	1... ..	TQEOFFQ	Element is off of the queue.
	.1... ..1.1	TQEMDNT	MIDNIGHT element.
	.1... ..	TQELTOD	Local TOD requested.
	..1... ..	TQEPOST	Task associated with this job-step TQE has been posted.
	...1... ..	TQEEEXT	Exit specified.
	.... 1...	TQERLRQ	REAL requested.
	.... .11.	TQEWTRQ	WAIT requested.
	.... .1..	TQESVPR	SUPVSR requested.
	0000 0000	TQETKRQ	TASK requested.

TQE with Extended Timer

0 (0)	TQETCB		
TQEFLGS flag byte (see note 2 below)	TQETCBA - address of TCB		
4 (4)	TQEFLNK - address of next TQE		
8 (8)	TQEBLNK - address of previous TQE		
12 (C)	14 (E)	15 (F)	
TQEID - ID specified by user in STIMERE, or zero for task TQE	TQEFLGS1 flag byte (see note 3 below)	TQEFLGS2 reserved	
16 (10)	TQEVAL - time of expiration/time remaining		
	23 (17)		
24 (18)	TQESAV - interval value (cyclic TQE), or - save area (job step TQE)		
	31 (1F)		
32 (20)	TQEECIR - ECB or ECB address (WAIT TQE), or - IRB address (if EXIT was specified, and not WAIT TQE)		
36 (24)	TQECHN - address of TQE queue for this task		
	39 (27)		

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
2. TQEFLGS 0 (0)	1... ..	TQEOFFQ	Element is off active queues.
	1... ..1	TQENIU	Element not in use.
	.1... ..	TQEMDNT	MIDNIGHT element.
	..1... ..	TQERLRQ	REAL request (if not TASK TQE).
	...1... ..	TQEWTRQ	WAIT request (if not TASK TQE).
	....1...	TQEECB	ECB address or exit address specified.
	.... .1..	TQEJBST	Job step TQE.
	.... ..1.	TQESMF	10 minute SMF element.
	.... ...1	TQEDDSI	Dynamic dispatching statistics interval.
3. TQEFLGSI 14 (E)	1... ..	TQEMIRQ	Multiple intervals requested (system TQEs only)
	.1... ..	TQEMICI	Multiple intervals to continue indefinitely.
	..1... ..	TQETOD	TOD interrupt requested.
	...x xxxx		Reserved bits.

Time-Slice Control Element (TSCE)

(Mapped by IHBTSC; pointed to by CVTTSC, offset X'D8' in CVT)

0 (0) TSHIPR highest dispatching priority	TSFIRST	TSFIRSTA - first TCB in time-slice group
4 (4) TSLWPR lowest dispatching priority	TSLAST	TSLASTA - last TCB in time-slice group
8 (8) Reserved	TSNEXT	TSNEXTA - next TCB in time-slice group to be dispatched
12 (C)	TSLENGTH - length time-slice task is to run (milliseconds)	
		15 (F)



Unit Control Block (UCB)

UCB LOOKUP TABLE

The UCB lookup table is used by the I/O interruption supervisor to obtain the address of the UCB associated with an I/O interruption.

The UCB lookup table has the following characteristics:

1. **Creation:** The table is created at system generation time.
2. **Storage Area:** The table resides, as a permanent part of the resident supervisor, in protected resident storage (when protection is available).
3. **Size:** The size of the table is dependent upon the number and the unit addresses of I/O devices, control units, and physical channels attached to the system.
4. **Means of Access:** Use the table values in the algorithm routine.
The table is addressed by the CVT. The algorithm (shown as follows) is used to obtain the address of the UCB.

IECILK1 + 3-bit channel address \longrightarrow K
 IECILK1 + 4-bit control unit address + K \longrightarrow L
 IECILK2 + 2 (4-bit device address) + 2L \longrightarrow the actual UCB address
 THE \longrightarrow reads "is the address of."

For a system in which the value of IECILK1 exceeds 255, the L_n field is 2 bytes, and the algorithm is:

IECILK1 + 4-bit channel address \longrightarrow K
 IECILK1 + 2 (4-bit logical control unit address) + K \longrightarrow L *
 IECILK2 + 2 (4-bit logical device address) + 2L \longrightarrow UCB address

IECILK1 \longrightarrow K
 is the starting address of the UCB lookup table. \longrightarrow is the index value obtained from the channel portion of the UCB lookup table.

IECILK2 \longrightarrow L
 is the starting address of the UCB address list portion of the UCB lookup table. \longrightarrow is the index value obtained from the control unit portion of the UCB lookup table.

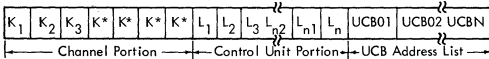
Actual UCB address
 is the 2-byte address of the UCB associated with the I/O interruption. This address is obtained from the UCB address list portion of the UCB lookup table.

* Where channel ADDR greater than 6 is generated, use:

IECILK1 + 2 (4-bit logical control unit address) + 2K \longrightarrow L

Note: The addresses of both the IECILK1 and the IECILK2 are contained in the CVT.

UCB LOOKUP TABLE FORMAT (SEGMENTED)



K_n (1 byte)

The channel portion contains index values that are relative to the starting address of the entire UCB lookup table.

L_n (2 bytes)

The control unit portion contains index values that are relative to the starting address of the UCB address list.

UCB_n (2 bytes)

The UCB address list contains the addresses of the UCB's in the system.

HOW TO FIND SPECIFIC I/O DEVICE UCB

CVT + 36 DEC (24 hex) is pointer to IECILK1.

CVT + 40 DEC (28 hex) is pointer to IECILK2.

Assume IECILK1 is at 1620.

Assume IECILK2 is at 1644.

Assume that the UCB for unit 191 is to be located.

'K' is Channel Index Value.

'L' is Unit Index Value.

IECILK1 + 3 Bit Chan Addr = Addr of K
1620 + 1 = 1621
Location 1621 contains 10

IECILK1 + 4 Bit Unit Addr. + K = Addr of L
1620 + 9 + 10 = 1639
Location 1639 contains 1F

IECILK2 + 2(Device Addr) + 2(L) = Pointer to Beginning
1644 + 2(1) + 2(1F) = of 191 UCB
1644 + 2 + 3E = 1684
Location 1684 contains 1994
(1994 is beginning of UCB for 191).

(Mapped by IEFUCBOB LIST=YES)

The UCB consists of three sections:

- common segment (common to all devices),
- device dependent segments, and
- device dependent extensions.

In this publication, the common segment is printed first, followed by the device segments in this order:

- DASD
- Channel-to-Channel Adapter Device Segment
- Magnetic Tape
- Card Reader
- Unit Record with UCS (1403 and 3211), Optical Reader (3886), Diskette I/O Unit (3540), and Printing Subsystem (3800)
- Graphics
- Tape Cartridge Reader (2495) and Optical Reader (1287/1288)
- Teleprocessing Devices (3704 and 3705)

The device dependent extensions follow the appropriate device dependent segments, although normally the extensions are not necessarily contiguous to the UCB.

The UCBTYP field is discussed in detail following the last device extension.

Common Segment

0 (0) UCBJBNR internal job identification (see note 1)	1 (1) UCBFL5 flags (see note 2)	2 (2) UCBID X'FF'=UCB identification	3 (3) UCBSTAT device status (see note 3)
4(4) UCBCHA channel address flags (see note 4)	5 (5) UCBUA unit address	6 (6) UCBFL1 flag byte (see note 5)	7 (7) UCBDTI index to device table
8 (8) UCBETI error routine (see note 6)	9 (9) UCBSTI - value x 10 = index to statistics table (STATAB)	10 (A) UCBLCI - value x 8 = index to logical channel table (LCHTAB)	11 (B) UCBATI - index to attention table (ANTAB) (see note 7)
12 (C) UCBWGT flags and channel mask (see note 8)	13 (D) UCBNAME - unit name (EBCDIC)		
16 (10) UCBTYP - this field is described separately and in detail at the end of the descriptions of all other UCB fields			
20 (14) UCBLTS - last request element		22 (16) UCBSNS - sense information for UCBFL7 - X'80' = devices with < 6 3211 CANCEL sense bytes key depressed	

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. UCBJBNR 0 (0)	xxxx	UCBKEY	Internal job identification: Job protection key - set if the mounted volume is to be retained or to contain a passed data set.
	.... 00..		Must be zero.
	.... ..1.	UCBDEM	Set during device allocation if the volume is to be demounted and is retained or contains a passed data set. Causes job name in demount message.
	.... ...1	UCBMONT	Set during device allocation if the volume to be mounted is to be retained or to contain a passed data set.
2. UCBFL5 1 (1)	1...	UCBUESNS	Flag byte: Unit exception status in CSW in response to sense.
	.1..	UCBAF	Attention for this console device is to be processed by the Communi- cation Task.
	.1..	UCBAMV	Successful comparison checking of the VSAM catalog and the VTOC (VSAM DASD only).
	..1.	UCBTICBT	Channel end and/or device end, or mount condition pending.
	...1	UCBVSDR	Device has variable length SDRs.
	.... 1...	UCBEXTSN	UCBNBRSN (offset X'18') contains the number of bytes of sense information, and UCSNADR (offset X'19') contains the address of the sense information.
	.... .1..	UCBNALOC	This offline device is being used by a system component; its device status must not change to online or it will not be allocated. The last path/channel/CPU to the device must not be varied offline, and the device is unavailable to other system components that process offline devices. To set this bit on, a component must obtain exclusive system-level control of resource SYSIEFSD, Q4 (via an ENQ macro). Serialization is not required to turn this bit off.
	.... ..1.	UCBALTCU	Device has an alternate control unit address.
	.... ...1	UCBALTPH	Device has an alternate path.
3. UCBSTAT 3 (3)	1...	UCBONLI	<u>Device status of nonconsole devices and console devices without MCS.</u> Device is online.
	0...		Device is offline.
	11..	UCBCHGS	Device status is to be changed from online to offline, and either allocation is enqueued on devices, or the device is allocated.

...1.	UCBRESV	The mount status of this volume is reserved.*
...1.	UCBUNLD	UNLOAD operator command has been addressed to this device; the device is not yet unloaded.
.... 1...	UCBALOC	Device is allocated.
.... .1..	UCBPRES	The mount status of this volume is permanently resident.*

*If the mount status is neither reserved nor permanently resident, then it is removable.

.... .1.	UCBSYSR	System residence device or active console.
....1	UCBDADI	Standard tape labels have been verified for this tape volume.

Console devices with MCS - status during execution of a VARY command:

10.. 0.01	Device status is to be changed from online unallocated to online active console, and allocation is enqueued on devices.
10.. 0.11	Device status is to be changed from online active console to online.
10.. 1.01	Device status is to be changed from online allocated to online active console. The status will be changed when the device is no longer allocated.
11.. 0.00	Device status is to be changed from online unallocated to offline, and allocation is enqueued on devices.
11.. 1.00	Device status is to be changed from online allocated to offline.
11.. 0.11	Device status is to be changed from online active console to offline.

Console devices with MCS - status after execution of a VARY command:

00.. 0.00	Device is offline.
10.. 0.00	Device is online and unallocated.
10.. 1.00	Device is online and allocated.
10.. 0.10	Device is an online active console.

4. UCBCHA 4 (4)	1... .... .1.. .... ..xx xxxx	UCBHIO UCBMOD UCBCHANA	Channel address flags: Halt I/O. Status modifier. Channel address (binary number).
5. UCBFL1 6 (6)	1... .... .1.. .... ..1. .... ..0. .... ...1 1... .... .xx. .... .01. 11. 1	UCBBUSYD UCBNOTRD UCBUSING UCBINTER UCBNOTRC UCBSTS UCBERR	Flag byte: Device busy. Device not ready. A channel program using this device has not yet been posted as having completed. No channel program is being executed using this device. After a channel-end status, a separate device-end status occurred with an error indication (IOB intercept flag). Control unit busy. Device status: Stand-alone channel program of I/O supervisor is being executed or already was executed (DASD-arm seeking), or Inhibit HIO instruction because the line is in receive status (TP). User's channel program is being executed (DASD channel transfer). I/O error routine is in control of this device. No other I/O operations are permitted.

6. UCBETI - A binary number used by the exit effector routine to complete the 8-byte name of an IBM-supplied error routine for this device.

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
7. UCBATI 11 (B)	.... ..1. .... ..1. xxxx xx..	UCBHALI UCBHPDV	Index to the attention table (ANTAB) JES allocation indicator. JES pseudodevice. Reserved bits
8. UCBWGT 12 (C)	1... .... .1.. .... ..1. .... ...1 xxxx 1... .... .1.. .... ..1. .... ...1	UCBIN UCBOUT UCBPUB UCBREW UCBPATH UCBPATH0 UCBPATH1 UCBPATH2 UCBPATH3	Flags and channel mask: SYSIN SYSOUT It is assumed that this device will be allocated for a public volume request. Rewind command has been addressed to this magnetic tape device by I/O support. I/O supervisor path mask (used where there are two or more paths to a device). Primary path 0 is inoperative. Optional path 1 is inoperative. Optional path 2 is inoperative. Optional path 3 is inoperative.

DASD Device Dependent Segment

24 (18) UCSENSN - no. of expanded sense bytes	UCBSENSE (for devices with >6 sense bytes)		
		UCBSENSA - address of expanded sense information	
28 (1C) UCBVOLI - volume serial number			
		34 (22) UCBSTAB volume status (see note 1)	35 (23) UCBDMCT volume use (see note 2)
36 (24) UCBVTOC - relative address of VTOC for this volume (TTR0)			
40 (28) UCBSQC - no. of RESERVE macro instructions issued	41 (29) UCBDVRES device reserva- tion indicator (see note 3)	42 (2A) RQE address used to verify volser (set from UCBLTS after unsolici- ted device end)	
44 (2C) UCBFL4 flags (see note 4)	UCBORSVA UCBORSVB - address of DEB for first user on queue for this device		
48 (30) UCBSKA - address of last seek (MBBCCHHR)			

55 (37)

56 (38) UCBUSER number of current users	UCBEXTN UCBEXTNA - address of DASD UCB extension 2
60 (3C) UCBFL6 - X'80' =read home addr and R0 per- formed by DSS	UCBEXT UCBEXTA - address of DASD UCB extension 1 63 (3F)

DASD UCB Extension 1

(Pointed to by UCBEXT, offset X'3C'; not necessarily contiguous to UCB)

104 (68) UCBERP - error recovery storage and work area 143 (8F)
144 (90) UCBOVFLW - track overflow work area 183 (B7)

DASD UCB Extension 2

(Pointed to by UCBEXTN, offset X'38'; not necessarily contiguous to UCB)

0 (0) UCBRVS32 reserved	UCBDEXP UCBDEXPA - address of entry in EXCP Counts Table that corresponds to this DASD device		
4 (4) UCBLTTDS (see note 5)	5 (5) UCBRVS53 reserved	6 (6) UCBRVS54 reserved	7 (7) UCBRVS55 reserved

Notes:

Flag Field	Bit	Mask Name	Meaning
1. UC BSTAB 34 (22)	1... .... .1... .... ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	UCBBSVL UCBPGFL UCBPRSRS UCBBPRV UCBBPUB UCBBSTR UCBBJLB UCBBNUL	DASD volume status: Not sharable. UCB is open and is being used as a page file. This device was specified in response to message IEF250I listing volumes and device types of volumes specified in PRESRES, but not mounted at IPL. Private volume Public volume Storage volume JOB LIB data set is on this volume. Control volume - a catalog data set is on this volume.
2. UC BDMCT 35 (23)	1... 0... .... ...xx xxxx	UCBMOUNT UCBDMC	DASD volume use: A mount request has been issued. A mount verification has been performed. Number of DCBs open for this volume.

3. UCBDVRES - device reservation indicator. In a system that includes the shared DASD option, this indicator is set equal to the contents of the UCBSQC field after a successful completion of an SIO instruction for DASD.
4. UCBFL4
44 (2C)
- | | | |
|-----------|----------|--|
| xxxx x... | UCBDAY | Flags: |
| 1... .. | UCBMNT | Volume verification flags. |
| .1.. .. | UCBVVRTN | A mount request has been issued by the volume serial verification routine. |
| ..1. | UCBFT | Volume serial verification routine is in control. |
| ...1 | UCBTCC | First entry of the volume serial verification routine for this volume. |
| 1... | UCBVER | Volume label is on an alternate track; the alternate track procedure is in progress. |
|xxx | UCBORCNT | Volume has been verified by the volume serial verification routine. |
| | | The number of requests for the device from the first user on the queue. |
5. UCBLTTDS - count of long-term temporary data sets (LTTDS) that are currently allocated on a direct access device. LTTDS are initiator SWADs and dedicated work files.

Channel-to-Channel Adapter Device Segment

24 (18)	UCBCCPM
UCBCCFLG - flag byte (see note 1)	UCBCCPMA - address of user parameter list
28 (1C)	
UCBCCCSW - CSW status	31 (1F)

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
1. UCBCCFLG 24 (18)	1... .. .1.. .. ..xx xxxx	UCBCCATN UCBCCERR	Channel-to-channel adapter flags: Attention routine is in control. Error occurred on sense command byte. Reserved bits.

Magnetic Tape Device Dependent Segment

24 (18) UCBSENSEN number of extended sense bytes	UCBSENSE (for devices with > 6 sense bytes)	
28 (1C)	UCBSENSA - address of expanded sense information	
UCBVOLI - volume serial number		
	34 (22) UCBSTAB volume status (see note 1)	35 (23) UCBDMCT volume mount switch (see note 2)
36 (24) UCBFSCT - data set sequence count	38 (26) UCBFSEQ - data set sequence number	
40 (28) UCFSER - Before OPEN: message IDs (see UCBSTAB, offset X'22.7') After OPEN: Data set serial number		
	46 (2E) UCBTFL1 flag byte (see note 3)	47 (2F) UCBRV010 reserved
48 (30) UCBVOPT volume statistics (see note 4)	UCBXTN UCBXTNB - address of magnetic tape UCB extension	

51 (33)

Prefix to Magnetic Tape UCB Extension

0 (0) UCBRV33 reserved	UCBTEXP UCBTEXPA - address of table containing EXCP count for this device
4 (4) UCBMTEND end of prefix	

Magnetic Tape UCB Extension

(Pointed to by UCBXTN, offset X'30'; not necessarily contiguous to UCB)

0 (0) UCBROR - CCW for opposite-direction recovery

7 (7)

8 (8) UCBCTD - binary serial number of tape drive on which volume was created (3420)		10 (A) UCBTRT temporary read error threshold (see note 5)	11 (B) UCBTWT temporary write error threshold (see note 6)
12 (C) UCBTR - no. of temporary read errors (binary)	13 (D) UCBTW - no. of temporary write errors (binary)	14 (E) UCBSIO - number of START I/O operations	
16 (10) UCBPR - no. of permanent read errors (binary)	17 (11) UCBPW - no. of permanent write errors (binary)	18 (12) UCBNB - no. of noise blocks (binary)	19 (13) UCBMS - mode set operation code for 3420 tape unit
20 (14) UCBERG - number of erase gaps (binary)		22 (16) UCBCLN - number of cleaner actions (binary)	
23 (17)			

Notes:

Flag Field	Bit	Mask Name	Meaning
1. UCBSTAB 34 (22)	1... ..	UCBDVSHR	Magnetic tape volume status: Device is not shared (3420 only). The scheduler will not perform a REWIND/UNLOAD operation when VARY OFFLINE is issued, because the tape device may be being used by another CPU (3400 series only).
	0... ..		
	.1..	UCBPGFL	UCB is open and being used as a page file.
	..1.	UCBBALB	Additional volume label processing.
	...1	UCBBPRV	Private volume.
	.... 1...	UCBBPUB	Public volume.
	.... .1..	UCBBSTR	The volume mounted has an ANSI label.
	.... ...1	UCBBNUL	If MCS is in the system, dismount or mount messages have been issued and the message IDs are at offsets 40 through 45. OPEN will delete the messages and turn this bit off.
	.... ..x.		Reserved bit.
2. UCBDMCT 35 (23)	x...	UCBMOUNT	Magnetic tape volume use: This switch indicates whether a volume has been mounted and whether the volume label found on the volume has been verified to be the type specified by the DD statement parameter.
	0...		DD Statement
	1...		<u>Param.</u>
			Any scheduler:
			No volume has been mounted.
			A volume has been mounted, but no volume label processing has been performed (normal scheduler processing).
			OPEN routine:
	1...	SL	Volume label is not standard format, or serial number is not correct.
	0...		A mount message has been issued. Standard volume label; correct serial number has been verified.

Notes:

<u>Flag Field</u>	<u>Bit</u>	<u>Mask Name</u>	<u>Meaning</u>
	1... ..		NSL OPEN routine: Volume label is not standard format. Control passes to the processing program's nonstandard label processing routine, <u>or</u> Volume label is standard format. Control remains with the OPEN routine. A mount message has been issued.
	0... ..		Nonstandard volume label has been verified (processing program).
	1... ..		NL OPEN routine: Standard volume label has been found. A mount message has been issued.
	0... ..		No standard volume label has been found.
	0... ..		BLP OPEN routine: Volume label has not been processed.
3. UCBTFL1 46 (2E)	.xxx xxxx	UCBDMC	Number of DCBs open for this volume.
	1... ..	UCBNLTP	Flag byte: Tape volume does not contain labels.
	.1... ..	UCBNSLTP	Tape volume contains nonstandard labels.
	..1. .... ...x xxxx	UCBNSRCH	This tape volume is not a scratch volume. Reserved bits.
4. UCBVOPT 48 (30)	1... ..	UCBESV	Volume statistics option: ESV (error statistics by volume) records are kept.
	.1..	UCBEVA	EVA (error volume analysis) records are kept.
	..1.	UCBESVC	ESV records are sent to the console.
	..0.		ESV records are sent to SYS1.MAN (X or Y).
	...1	UCBERPC	Error recovery procedure is in control.
	.... 1...	UCBESVE	An ESV record has been issued for this volume because of an EOV condition.
	.... ...1	UCBASNDE	Unsolicited device end occurred on a 3420 Magnetic Tape Unit.
	.... .xx.		Reserved bits.
5. UCBTRT -	temporary read error threshold. This field contains a binary number from 1 through 255, as selected at SYSGEN time by specifying SCHEDULR EVA=(N1,N2). If this field equals 0, EVA is not in effect.		
6. UCBTWT-	temporary write error threshold. This field contains a binary number from 1 through 255, selected at SYSGEN time by specifying SCHEDULR EVA=(N1,N2). If this field equals 0, EVA is not in effect.		

Card Reader UCB Segment

0 (0) UCBJMRQE - RQE address	2 (2) Zeros
	3 (3)

Unit Record with UCS (1403 and 3211) Segment

Optical Character Reader (3886) Segment

Diskette I/O Unit (3540) Segment

Printing Subsystem (3800) Segment

24 (18) UCBNBRSN no. of sense bytes (3211 3540 and 3800)	25 (19) UCBSNADR - address of sense information (UCBSNS, offset X'16' for 1403; UCBSNSXT, in device extension for 3211 and 3540); UCBSNSX in 3800 extension
28 (1C) UCBXTADR - address of UCS UCB extension (1403, 3211), or - address of 3886 UCB extension, or - address of 3540 UCB extension, or - address of 3800 UCB extension	31 (1F)

Unit Record with UCS (1403 and 3211) Extension

(Pointed to by UCBXTADR, offset X'1C'; not necessarily contiguous to UCB)

0 (0) UCBUCSID - UCS image identification in buffer			
4 (4) UCBUCSOP format of UCS image in buffer (see note 1)	5 (5) UCBFCBOP X'80'=FCB image is default image	6 (6) UCBRVS51 reserved	7 (7) UCBERCNT error count (see note 2)
8 (8) UCBFCBID - FCB image identification			
12 (C) UCBDCBNR number of DCBs using this device	UCBERADR UCBERADD - address of ERP logout area		

Notes:

Flag Field	Bit	Mask Name	Meaning
1. UCBUCSOP 4 (4)	1... .. .1... .. ... ..1 ..xx xxx.	UCBUCS01 UCBUCS02 UCBUCSPE	Format of UCS image in buffer: UCS image is a default image. UCS image is in FOLD mode. UCS image has parity error (3211). Reserved bits.
2. UCBERCNT - 7 (7)			contains a count of the errors that have occurred. The count, which may wrap around, is written in standard OBR records (one per error) and in new device-dependent OBR records (three per error). (3211 only.)

3886 Optical Character Reader Extension

(Pointed to by UCBXTADR, offset X'1C'; not necessarily contiguous to UCB)

0 (0) UCBFRID - current FRID (format record ID) loaded	
4 (4) UCBRDATA - command data	7 (7)

3540 Diskette I/O Unit Extension

(Pointed to by UCBXTADR, offset X'1C'; not necessarily contiguous to UCB)

0 (0)		
UCBVLSE - 3540 vol-ID		
6 (6) UCBDKBYT flag byte (see note 1)		7 (7) reserved

Note:

Flag Field	Bit	Mask Name	Meaning
1. UCBDKBYT			3540 flag byte:
6 (6)	1... ..	UCBDKAMX	IBM-supplied diskette reader, diskette writer, or copy/restore utility is using this 3540 device.
	.1.. ..	UCBVLVER	Volume verification is required for certain "intervention required" conditions while 3540 diskette utilities are using this device.
	..xx xxxx		Reserved bits.

3800 Printing Subsystem Extension

(Pointed to by UCBXTADR, offset X'1C'; not necessarily contiguous to UCB)

0 (0) UCBOPTNS - Reserved	1 (1) UCBRV050 - Reserved	3 (3) UCBFRMDF-FORM- DEF options (see note 1)
4 (4) UCBCRIT - Reserved	5 (5) Reserved	7 (7) UCBCGMNO-No. of writeable char- acter generation modules
8 (8) UCBCGMID - four one-byte IDs for character modules loaded in writeable character generation modules		
12 (C) UCBCHAR1 - name of first translate table		
16 (10) UCBCHAR2 - name of second translate table		
20 (14) UCBCHAR3 - name of third translate table		
24 (18) UCBCHAR4 - name of fourth translate table		
28 (1C) UCBFCBNM - forms control buffer image name		

32 (20)	UCBIMAGE - forms overlay image identification
36 (24)	UCBMDRBF - miscellaneous data recording buffer address
	UCBMDRBA - miscellaneous data recording buffer address

Sense information UCB Extension for 3800 Printing Subsystem
(Painted to by UCBSNADR, offset X'19'; not necessarily contiguous to UCB)

0 (0)	UCBSENSX - sense information
	23 (17)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. UCBFRMDF			FORMDEF actions to be taken:
3 (3)	1...	UCBFMHLD	Hold is the default action.
	.1..	UCBFMPRC	Process is the default action.
	..1.	UCBFMBYP	Bypass is the default action.
	...x xxxx		Reserved bits.

Sense Information UCB Extension (3211 and 3886)

(Pointed to by UCBSNADR, offset X'19'; not necessarily contiguous to UCB)

0 (0) UCBSNSXT - sense information	
	6 (6) UCBRSV52 - reserved
7 (7)	

Graphic Devices (except 3270) Segment

24 (18)	UCBSENS - additional sense information	26 (1A)	UCBOPEN - no. of UCBs currently open for this device	27 (1B)	UCBGCB - graphic control byte for attention handling
28 (1C)	UCBTB - address of task entry block				
32 (20)	UCBSTART - last start address				
36 (24)	UCBBTA	UCBBTB - address of buffer table			39 (27)
UCBDI - no. of devices on control unit to which buf assigned					

3270 Graphic Device Segment

24 (18) UCBAOF1 flag byte (see note 1)	UCBAOF UCBAOF2 reserved	26 (1A) UCBATNCT attention count (see note 2)	27 (1B) UCBGCB graphic control byte (see note 3)
28 (1C) UCBGRAF - BTAM graphics flags (see note 4)	UCBIRB UCBIRBA - address of IRB used for scheduling second level attention routine		
32 (20) UCBIRLN initialized RLN (see note 5)	33 (21) UCBLDNCB - address of 3270 work area (VTAM) UCBRDYQA - asynchronous ready notification IRB address (BTAM)		
36 (24) UCBRLN device index (see note 6)	UCBCTLNK UCBCTLNA - control block link (see note 7)		

39 (27)

Notes:

Flag Field	Bit	Mask Name	Meaning
1. UCBAOF1 24 (18)	1... .. ..1.. .. ..1. .... ...x xxxx	UCBOFMCR UCBOFSP UCBOFNL	Flag byte: Magnetic Card Reader Adapter (3277 only). Selector pen (3277 only). Numeric lock (3277 only). Reserved bits.
2. UCBATNCT	- attention count. The number of attentions not serviced in the line group. This field is present only if the device index field (UCBRLN, offset X'24') is 1. Otherwise, this field is reserved.		
3. UCBGCB 27 (1B)	1... 1.. x.. .... .1.. 11.. 10.. 00.. .... .1. .... .1. ...x	UCBOLTEP UCBRTIAC UCBRIPND UCBSKPFG UCBATRCD	Attention flags: OLTEP in control of the device Device index = 1: READ INITIAL active. Device index ≠ 1: Reserved bit. READ INITIAL pending. A READ INITIAL is pending and waiting for an attention interrupt. An attention has been received, and the second level attention routine has been scheduled. No read operation is pending or in progress. Skip flag. Attention received from device. Reserved bits.
4. UCBGRAF 28 (1C)	1... .. ..1. .... ..1. .... ...1 1.. .... .1.. .... .1. .... .x	UCBOIP UCBDRO UCBDRNO UCBBTAM UCBUPM UCBRPND UCBDWNR	Graphics status (BTAM): OPEN is in progress. Device ready in OPEN. Device ready - not in OPEN. Use BTAM module IGG019UP. Use provided module. Ready processing not done. Device went not ready. Reserved bit.
5. UCBIRLN	- initialized RLN. This is the relative line number of the IOB initialized for a READ INITIAL. If this field is set to zero, no READ INITIAL is outstanding. This field is present only when the device index field (UCBRLN, offset X'24') is 1. Otherwise, the field is reserved.		
6. UCBRLN	- Device index. This field is an index to the DEB UCB address field for this device. This value is also the relative line number.		
7. UCBCTLNA	- control block link. If the device index field (UCBRLN, offset X'24') is 1, this field contains the address of the DEB for the line group. If the device index field is equal to a value from 2 through 255, this field contains the address of the UCB with a device index of 1.		

Tape Cartridge Reader (2495) Segment

Optical Character Reader (1287/1288)

24 (18)

UCBCRWKA - address of UCB extension for this device

27 (1B)

Tape Cartridge Reader (2495) Extension

(Pointed to by UCBCRWKA, offset X'18'; not necessarily contiguous to UCB)

0 (0)

UCBRCCW1 - retry channel program for ERP

7 (7)

8 (8)

UCBRCCW2 - retry CCW2

15 (F)

16 (10)

UCBRCCW3 - retry CCW3

23 (17)

24 (18)

UCBCSWA - CSA save area

31 (1F)

Optical Character Reader (1287/1288) Extension

(Pointed to by UCBCRWKA, offset X'18'; not necessarily contiguous to UCB)

0 (0)

UCBCRDDC - no.
of data check
errors (binary)

1 (1)

UCBCRIIC - no.
of incorrect
length errors
(binary)

2 (2)

UCBCRECC - no.
of equipment
check errors
(binary)

3 (3)

Reserved

7 (7)

Teleprocessing Device (3704 and 3705) Segment

24 (18)

UCBRV040 - reserved

28 (1C)

UCBICNCB - address of VTAM's ICNCB

31 (1F)



UNIT RECORD DEVICE CLASS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex-Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1	Byte 1		
		xxxx		I/O supervisor flags.
		1...		Device has no data-transmitting control commands.
		.1..		Overrunable device.
		..1.		Burst mode.
		..0.		Byte mode.
		...1		Data chaining.
		.... xxxx		Model code.
		.... 0000		Card Read Punch.
		.... 0001	-1	Card Punch only.
17 (11)	.1	Byte 2		
		1...		Optional features.
		.x.. x...		Universal character set (UCS).
		.... ...1		(Reserved bits)
		..1.		Card image (binary mode).
		...1		3525 two-line print feature.
		...1 .111		3525 multiline print feature.
		...1 .111		3886 Optical Character Reader
18 (12)	..1	Byte 3	08	Device class.
				Unit record.
19 (13)	...1	Byte 4		
			01	Device:
			02	2540 Card Reader.
			03	2540 Card Punch.
			04	1442 Card Read Punch.
			05	2501 Card Reader.
			06	2520 Card Read Punch.
			08	3505 Card Reader.
				1403 Printer (models N1,2,7) and
				1404 Printer (continuous form support only).
			09	3211 Printer.
			0A	1443 Printer (model N1 only).
			0B	3203 Model 4.
			0C	3525 Card Punch.
			0E	3800 Printing Subsystem.
			10	2671 Paper Tape Reader.
			16	3890 Magnetic Character Reader.
			17	3886 Optical Character Reader.
			18	2495 Tape Cartridge Reader.
			1B	1287 Optical Reader.
			1C	1288 Optical Page Reader.
			1D	1419 Magnetic Character Reader (primary control unit).
			1E	1419 or 1275 Optical Reader Sorter (secondary control unit).
			1F	1275 Magnetic Character Reader (primary control unit).
			20	1052 Console Printer-Keyboard.
			22	3210 Console Printer-Keyboard.
			23	3215 Console Printer-Keyboard.
			30	3213 Printer.
			42	3851 Mass Storage Control.
			44	3540 Diskette I/O Unit.

MAGNETIC TAPE DEVICE CLASS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
Byte 1				
16 (10)	1	xxxx x... .... .1.. .... .1. .... .0. .... ...1 xxxx x..x.... .1.. .... .1.		I/O supervisor flags. (Reserved bit) Overrunable device. Burst mode. Byte mode. Data chaining. Model code. (Reserved bits) 1600 BPI. 6250 BPI.
17 (11)	.1	Byte 2 1... .... .1.. .... .1. .... ...1 xxxx xx.. 1. 1		Optional features. 7-track compatibility (2400/3400). Data conversion (2400/3400). Dual-density (800/1600 BPI). Dual-density (1600/6250 BPI). Set to zero. Turn on at sysgen by specifying AP=YES in the IODEVICE macro (2401, 2415, 2420, 3410, 3420). Volume attribute. This volume must be mounted on a device supported by UPS (2401, 2415, 2420, 3410, 3420). Device attribute. This device supported by UPS (2401, 2415, 2420, 3410, 3420).
18 (12)	..1	Byte 3	80	Device class. Magnetic tape.
19 (13)	...1	Byte 4	01 03	Device: 2400 series magnetic tape device. 3400 series magnetic tape device.

DIRECT ACCESS STORAGE DEVICE CLASS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
		Byte 1		
16 (10)	1	xxxx 1... .... ..1. .... ..1. .... ..0. .... ...1 0000		I/O supervisor flags. Device has no data-transmitting control commands. Overrunnable device. Burst mode. Byte mode. Data chaining. Model code.
17 (11)	.1	Byte 2 ..1. .... ..1. .... ...1 xxxx xx.. 1... .... ..1. 1		Optional features. Track overflow. This device can be shared between two or more CPUs. Rotational sensing device. Set to zero. Turn on at sysgen by specifying AP=YES in the IODEVICE macro (2314, 2319, 3330, 3333, and 3340). This is a virtual device. Volume attribute. This volume must be mounted on a device supported by UPS. (2314, 2319, 3330, 3333 and 3340). Device attribute. This device supported by UPS (2314, 2319, 3330, 3333, and 3340).
18 (12)	..1	Byte 3	20	Device class. Direct access storage device.
19 (13)	...1	Byte 4	06 07 08 09 0A 0B 0D	Device: 2305 Fixed Head Storage Facility Model 2305 Fixed Head Storage Facility Model 2314/2319 Direct Access Storage Facility 3330 Model 1 or 3333 Model 1 Disk Storage 3340 Disk Storage. 3350 Direct Access Storage. 3330 Model 11 or 3333 Model 11 Disk Storage.

GRAPHIC DEVICE CLASS

2250 Display Unit

Offset	Bytes and Alignment	Hex. Dig.	Field Description, Contents, Meaning
16 (10)	1	Byte 1	J- Device Class 1- 1053, 2260 3- 2250 -K Model Code -1 Model 1. -2 Model 2. -3 Model 3.
17 (11)	.1	Byte 2	Optional Features <u>Model</u> <u>Optional Features</u> 0- 1,2,3 No optional features. 1- 1,2,3 Programmed function keyboard only. 2- 1,2 Light pen only. 3- 1,2 Programmed function keyboard, and light pen. 4- 1,2,3 Alphameric keyboard only. 5- 1,2,3 Programmed function keyboard and alphameric keyboard. 6- 1,2 Alphameric keyboard and light pen. 7- 1,2 Alphameric keyboard, light pen and programmed function keyboard. 8- 1,2 Absolute vector graphics only. 9- 1,2 Absolute vector graphics and programmed function keyboard. A- 1,2 Absolute vector graphics and light pen. B- 1,2 Absolute vector graphics, programmed function keyboard and light pen. C- 1,2 Absolute vector graphics and alphameric keyboard. D- 1,2 Absolute vector graphics, programmed function keyboard and alphameric keyboard. E- 1,2 Absolute vector graphics, alphameric keyboard, and light pen. F- 1,2 Absolute vector graphics, alphameric keyboard, light pen, and programmed function keyboard. -0 1 No optional features. -1 1 4K buffer only. -2 1 8K buffer only. -3 1 Character generator only. -4 1 4K buffer and character generator. -5 1 8K buffer and character generator. -6 1 Graphic design feature only. -7 1 Graphic design feature and 4K buffer. -8 1 Graphic design feature and 8K buffer. -9 1 Graphic design feature and character generator. -A 1 Graphic design feature, 4K buffer, and character generator. -B 1 Graphic design feature, 8K buffer, and character generator.
18 (12)	..1	Byte 3	Device class 10 Graphics
19 (13)	...1	Byte 4	Device: 02 2250 Display Unit.

3277 GRAPHICS DEVICE CLASS

3270 A/N Display System Display Station

Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning
Byte 1				
16 (10)	1		11	3277 Model 1.
			12	3277 Model 2.
17 (11)	.1	Byte 2		Optional features.
		000.		No keyboard.
		001.		66-key EBCDIC typewriter keyboard.
		010.		78-key EBCDIC typewriter keyboard.
		011.		66-key data entry keyboard.
		100.		78-key operator console keyboard.
		101.		66-key ASCII typewriter keyboard.
		110.		78-key ASCII typewriter keyboard.
		....1		Audible alarm.
		.... 000.		Domestic character generator.
		.... 001.		ASCII A character generator.
		.... 010.		ASCII B character generator.
		.... 011.		United Kingdom character generator.
		.... 100.		French character generator.
		.... 101.		German character generator.
		.... ...0		Monospace character generator.
18 (12)	..1	Byte 3		Device class.
			10	Graphics.
19 (13)	...1	Byte 4		Device:
			09	3277 Display.
			0C	3156 Display Console.
			0E	3138 Display Console.
			0F	3148 Display Console

3284 and 3286 Printers

Offset	Bytes and Alignment		Hex. Dig.	Field Description, Contents, Meaning
16 (10)	1	Byte 1	11	Model 1.
			12	Model 2.
17 (11)	.1	Byte 2		Reserved--no optional features.
18 (12)	..1	Byte 3		Device Class.
			10	Graphics.
19 (13)	...1	Byte 4		
			0A	3284 Printer.
			0B	3286 Printer.

GRAPHICS DEVICE CLASS

2260 Display Station

<u>Offset</u>	<u>Bytes and Alignment</u>		<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1	Byte 1	J- 1- 3- -K -1 -2	Device class. 1053, 2260 2250 Model code Model 1. Model 2.
17 (11)	.1	Byte 2		Optional features
				Optional Features
			0- 1- 2- 3- 4- 5- 6- 7- 8- 9- A- B- C- D- E- F- -B -C -D -E	No optional features. Line addressing only. Numeric keyboard only. Line addressing and numeric keyboard. Alphanumeric keyboard only. Line addressing and alphanumeric keyboard. Non-destructive cursor only. Line addressing and non-destructive cursor. Numeric keyboard, and non-destructive cursor. Line addressing, numeric keyboard and non-destructive cursor. Alphanumeric keyboard and non-destructive cursor. Line addressing, alphanumeric keyboard and non-destructive cursor. Data entry keyboard only. Data entry keyboard and line addressing. Data entry keyboard and non-destructive cursor. Data entry keyboard, line addressing, and non-destructive cursor. 2848 Display Control, Model 1 with 240 character display capability. 2848 Display Control, Model 2 with 480 character display capability. 2848 Display Control, Model 3 with 960 character display capability. 2848 Display Control, Model 21 with 240 character display capability. 2848 Display Control, Model 22 with 480 character display capability.
18 (12)	..1	Byte 3		Device class
			10	Graphics.
19 (13)	...1	Byte 4		Device:
			03	2260 Graphic Display Unit.

GRAPHICS DEVICE CLASS

Other than 2250, 2260, or 3270

<u>Offset</u>	<u>Bytes and Alignment</u>		<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1	Byte 1	J- 1- 3- -K 14	Device class. 1053, 2260 2250 Model code 1053 Printer, Model 4.
17 (11)	.1	Byte 2		Optional Features Device 00 1053 No optional features. 00 2280 No optional features.
18 (12)	..1	Byte 3	10	Device Class Graphics.
19 (13)	...1	Byte 4	04 08	Device. 1053 Printer. 3066 System Console

COMMUNICATION EQUIPMENT DEVICE CLASS

Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning																																																						
Byte 1																																																										
16 (10)	1	xxxx		I/O supervisor flags																																																						
		1...		Device has no data-transmitting control commands.																																																						
		.1..		Overrunable device.																																																						
		..1.		Burst mode.																																																						
		..0.		Byte mode.																																																						
		...1		Data chaining.																																																						
	 xxxx		Model code																																																						
				The value in this field and the value in the adapter type field (byte 4, bits 0-3) together identify the model.																																																						
				Adapter																																																						
				<table><tr><th>Type</th><th>Model</th></tr><tr><td>.... 0001</td><td>-1</td></tr><tr><td></td><td>1- 1050</td></tr><tr><td></td><td>2- 1030</td></tr><tr><td></td><td>3- 1050</td></tr><tr><td></td><td>4- 83B3</td></tr><tr><td></td><td>5- TWX</td></tr><tr><td></td><td>6- WTTA</td></tr><tr><td></td><td>8- 2260</td></tr><tr><td>.... 0010</td><td>-2</td></tr><tr><td></td><td>1- 1060</td></tr><tr><td></td><td>4- 115A</td></tr><tr><td>.... 0011</td><td>-3</td></tr><tr><td></td><td>1- 2740 (Correspondence code).</td></tr><tr><td>.... 0100</td><td>-4</td></tr><tr><td></td><td>1- 2740</td></tr><tr><td>.... 0101</td><td>-5</td></tr><tr><td></td><td>1- 2741C (Correspondence code).</td></tr><tr><td></td><td>9- BSC1 (Nonswitched point-to-point.)</td></tr><tr><td>.... 0110</td><td>-6</td></tr><tr><td></td><td>1- 2741P (PTTC/BCD or PTTC/EBCDIC code).</td></tr><tr><td></td><td>9- BSC2 (Switched point-to-point.)</td></tr><tr><td>.... 0111</td><td>-7</td></tr><tr><td></td><td>9- BSC3 (Nonswitched multipoint.)</td></tr><tr><td></td><td>1- 1050X (Inhibit)</td></tr><tr><td>.... 1000</td><td>-8</td></tr><tr><td></td><td>1- 2740X (Inhibit)</td></tr></table>	Type	Model 0001	-1		1- 1050		2- 1030		3- 1050		4- 83B3		5- TWX		6- WTTA		8- 2260 0010	-2		1- 1060		4- 115A 0011	-3		1- 2740 (Correspondence code). 0100	-4		1- 2740 0101	-5		1- 2741C (Correspondence code).		9- BSC1 (Nonswitched point-to-point.) 0110	-6		1- 2741P (PTTC/BCD or PTTC/EBCDIC code).		9- BSC2 (Switched point-to-point.) 0111	-7		9- BSC3 (Nonswitched multipoint.)		1- 1050X (Inhibit) 1000	-8		1- 2740X (Inhibit)
Type	Model																																																									
.... 0001	-1																																																									
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	1- 1050X (Inhibit)																																																									
.... 1000	-8																																																									
	1- 2740X (Inhibit)																																																									
17 (11)	.1	Byte 2		Optional features.																																																						
		1...		Automatic calling.																																																						
		.1..		Automatic polling.																																																						
		..1.		Checking (2740 only).																																																						
		..1.		Dual Communication Interface (2701 SDA-II).																																																						
		...1		Automatic answering.																																																						
	 1..		Dual Code (2701 SDA-II).																																																						
	 10..		Station control (2740 only).																																																						
	 01..		Transmit control (2740 only).																																																						
	 11..		Optical image unit.																																																						
	xx		Binary value.																																																						
	00		SADZER																																																						
	01		SADONE																																																						
	10		SADTWO																																																						
	11		SADTHREE																																																						
18 (12)	..1	Byte 3		Device class.																																																						
			40	Communication equipment.																																																						
19 (13)	...1	Byte 4		Adapter Type.																																																						
			1-	IBM Terminal Adapter, Type I.																																																						
			2-	IBM Terminal Adapter, Type II.																																																						
			3-	IBM Telegraph Adapter.																																																						
			4-	Telegraph Adapter, Type I.																																																						
			5-	Telegraph Adapter, Type II.																																																						
			6-	World Trade Telegraph Adapter.																																																						
			7-	Synchronous Adapter, Type I.																																																						
			8-	IBM Terminal Adapter, Type III.																																																						
			9-	Synchronous Adapter, Type II. Control Unit.																																																						
			15	3705 with Channel Adapter Type 1.																																																						
			25	3705 with Channel Adapter Type 2.																																																						
			-1	2702																																																						
			-2	2701																																																						
			-3	2703																																																						
			-4	2955																																																						
			-F	5098																																																						
			F1	3791																																																						

COMMUNICATION EQUIPMENT DEVICE CLASS

(Channel-to-Channel Adapter)

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Diag.</u>	<u>Field Description , Contents, Meaning</u>
16 (10)	1	Byte 1	80	
17 (11)	.1	Byte 2	00	
18 (12)	..1	Byte 3	41	Channel-to-Channel Adapter.
19 (13)	...1	Byte 4	00	

DUMMY DEVICE CLASS

(Non-Standard Devices)

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1	Byte 1		
17 (11)	.1	Byte 2		
18 (12)	..1	Byte 3	01	Dummy Device Class used to bypass device status initial- ization and Missing Interrupt Handling.
19 (13)	...1	Byte 4		

Unit Control Module (UCM)

(Mapped by IEUCUM SYS=AOS1,FORMAT=NEW)

Multiple Console Support Prefix to UCM Base
(Pointed to by UCMPRFXP, X'-4', in UCM Base)

0 (0)		
UCMMCENT - address of master console UCM entry		
4 (4)		
UCMSAVE0 - resident register save area for IEACVTSK (18 words)		
75 (4B)		
76 (4C)		
UCMDOME - address of first DOM element		
80 (50)		
UCMWTOX - address of WTO/WTOR exit routine (IEECVXIT)		
84 (54)	UCMSFLGS	86 (56)
UCMSFLG1 system control flags (see note 1)	UCMSFLG2 system control flags (see note 2)	UCMOWTOR - default values for old WTO/WTOR macros
88 (58)		
UCMCMID - current message identification number		
92 (5C)		
UCMHCUCM - address of hard-copy UCM entry (or zero)		
96 (60)	97 (61)	
UCMXCT external request count	UCMUEXIT - address of user exit data (or zero)	
100 (64)	102 (66)	
UCMHRDRT - hard-copy routing code assignments	UCMRSV03 - reserved	

104 (68)		
UCBXSA - parameter list area for SVC 72 (6 words)		
127 (7F)		
128 (80)		
UCMQRTN - address of ENQ routine entry point		
132 (84)		
UCMRUTCK - route checking data		
136 (88)		
UCMDOMRT - address of DOM routine entry point		
140 (8C)		
UCMTPPTR - address of 2740 device support processor		
144 (90)		
UCMNPECB - NIP ECB (posted when NIP's hard copy can be written)		
148 (94)		
UCMLOGAD - address of WTL buffer		
152 (98)		
UCMDTINT - dynamic display time interval		
156 (9C)	157 (9D)	158 (9E)
UCMSDS1 - SDS flags (see note 3)	UCMSDS2 reserved	UCMGMCNT - WQE dynamic buffer count
159 (9F)		

Notes:

<u>Flag</u>	<u>Byte</u>	<u>Bit</u>	<u>Mask</u> <u>Name</u>	<u>Meaning</u>
1. UCMSFLG1				
84 (54)	.1..	....	UCMSYSB	System control flags:
	..1.	....	UCMSYSC	Hard-copy support required.
	...1	....	UCMSYSD	Commands to hard copy.
	....1	....	UCMSYSE	Console switch for master.
	....	1..	UCMSYSF	No consoles active.
	....	.1..	UCMSYSF	Graphic consoles active.
	....	..1.	UCMSYSG	Hard-copy device is SYSLOG.
	x...	...x		Reserved bits.

2. UCMSFLG2

85 (55)

1... ..

UCMSYSI

.1.. ..

UCMSYSJ

..1.

UCMSYSK

...1

UCMSYSL

.... 1...

UCMSYSM

.... .1..

UCMSYSN

.... ..1.

UCMSYSO

.... ..x

System control flags:

WQE housekeeping required.

Hard copy to be written.

New console is composite.

OPEN being issued to ring console alarm.

Failing console composite.

Graphic console active.

Dummy attention by WTL.

Reserved bit.

3. UCMSDS1

156 (9C)

1... ..

UCMSDS1A

.1.. ..

UCMSDS1B

..xx xxxx

SDS flags:

STCMDS to hard copy.

INCMDS to hard copy.

Reserved bits.

UCM Base

-4 (-4)

UCMPRFXP - address of UCM Multiple Console Support Prefix

0 (0)

UCMXECB - external interrupt ECB

4 (4)

UCMAECB - attention interrupt ECB

8 (8)

UCMOECB - WTO/WTOR request ECB

12 (C)

UCMDECB - DOM request ECB

16 (10)

UCMRECB - RMS request ECB

20 (14)

UCMLSTP - address of UCM EIL (event indication list)

24 (18)

UCMWTOQ - address of first WQE (SYSOUT queue)

28 (1C)

UCMRPYQ - address of first ORE

32 (20) UCMRPY1 - reply-ID assignment pattern			
45 (2D) UCMRQLM - ID assignment limit		46 (2E) UCMWQLM - WQE buffer limit	
48 (30) UCMRQECB - reply request waiting ECB			
52 (34) UCMWQECB - buffer request waiting ECB			
56 (38) UCMRQNR - current ORE count		58 (3A) UCMWQNR - current WQE count	
60 (3C) UCMWQEND - address of last WQE, or zero			
64 (40) UCMPXA - address of communications task TCB			
68 (44) UCMMODE mode flags (see note 1)	69 (45) UCMCORE WTO purge routine	70 (46) UCMMODEL system model number	71 (47) UCMINCR -console initialization error handling
72 (48) UCMVEA - address of first UCM entry			
76 (4C) UCMVEZ - length of UCM entry			
80 (50) UCMVEL - address of last UCM entry			
84 (54) UCMSAVE3 - save area for ED2 (refreshability)			
139 (8B)			
140 (8C) UCMSAVE4 - save area for IEACVTSK			
203 (CB)			

204 (CC)	UCMR9SV - save area for ED2 (refreshability)
208 (D0)	UCMWEA - address of first WQE
212 (D4)	UCMWEZ - length of WQE
216 (D8)	UCMWEL - address of last WQB
220 (DC)	UCMREA - address of first ORE
224 (E0)	UCMREZ - length of ORE
228 (E4)	UCMREL - address of last ORE
232 (E8)	UCMOPENX - work area for OPEN/CLOSE processing
463 (16B)	

Note:

Flag Byte	Bit	Mask Name	Meaning
1. UCMMODE 68 (44)	.... 1...	UCMAMFA	Mode flags: Accept VARY command with MSTCONS operand from any MCS secondary console.
	.... .1..	UCMOGCE	Only graphics consoles are active.
	.... ..1.	UCMMCS	MCS generated with system.
	.... ...1	UCMFIIX	VS1.
	.... ...0		VS2.
	xxxx		Reserved bits.

UCM Event Indication List

(Pointed to by UCMLSTP, X'14', in UCM Base)

0 (0) length of EIL in words	1 (1) UCMRPYL - last reply-ID assigned	2 (2) UCMRTCT route count	3 (3) UCMRSV15 reserved
------------------------------------	---	---------------------------------	-------------------------------

4 (4)	UCMNIPTR - address of NIP's WTL buffer (2K in length)
8 (8)	UCMXECBA - address of external interrupt ECB
12 (C)	UCMAECBA - address of attention interrupt ECB
16 (10)	UCMOECBA - address of WTO/WTOR request ECB
20 (14)	UCMDECBA - address of DOM request ECB
24 (18)	UCMRECBA - address of RMS request ECB

The following fields are repeated for each console device defined at sysgen (one is minimum). The last entry has a high-order byte of X'80'.

28 (1C) UCMIECBF X'80'=last entry	UCMIECBA UCMIECBP - address of I/O request ECB
--	---

UCM User Exit Work Area

0 (0)	UCMMSTXT - message text	127 (7F)
128 (80)	UCMROUTC - route codes	
132 (84)	UCMDESCD - descriptor codes	

136 (88)	UCMXTSAV - save area for IEECMWSV interface	207 (CF)
208 (D0)	UCMTPSAV - save area for 2740 support processor	280 (118)

UCM Individual Device Entry (One for each console specified at sysgen.)

0 (0)	UCMECB - I/O completion ECB, or address of I/O completion ECB (for 2740)		
4 (4)	UCMSBR - address of resident processor module		
8 (8)	UCMDCB - address of DCB		
12 (C)	UCMUCB - UCB name (device address), or address of UCB		
16 (10)	UCMNAME - processing module name		
24 (18)	25 (19)	26 (1A)	23 (17)
UCMSTS status flags (see note 1)	UCMATR attribute flags (see note 2)	UCMID unique entry ID	UCMXA UCMRV18 reserved
28 (1C)	UCMXB - address of DCM (graphics) or zero		
32 (20)	34 (22)		
UCMRTCD - routing codes assigned to this console	Reserved		

36 (24) UCMOUTQ - address of output queue			
40 (28) UCMAUTHA command code authorization (see note 3)	UCMAUTH UCMAUTHB reserved	42 (2A) UCMDISP1 disposition flags (see note 4)	UCMDISP UCMDISP2 reserved in VS1
44 (2C) UCMALTEN - address of alternate input UCM entry			
48 (30) UCMOAOEN - address of output/alternate output UCM entry			
52 (34) UCMWLAST - address of last WQE serviced in output queue			
56 (38) UCMCOMPC - address of other device entry if this is a composite console			
60 (3C) UCMMSG1 message flags (see note 5)	UCMMSG UCMMSG2 reserved	62 (3E) UCMXOR XOR mask (set to zero)	63 (3F) UCMDEVIC - device control flags (see note 6)
64 (40) UCMMLAST - address of last minor WQE handled			
68 (44) UCMSDS5 SDS flags (see note 7)	UCMRCT UCMRCTA - address of RCT		
72 (48) UCMINPUT - input buffer (present only in fixed mode)			

216 (D8)

216 (D8)

Notes:

Flag Byte	Bit	Mask Name	Meaning
1. UCMSTS 24 (18)	1... ..	UCMAF	Status flags:
	.1... ..	UCMPF	Attention pending.
	..1.	UCMBF	Output pending.
	...1	UCMBF	Device busy.
	.... 1...	UCMCF	CLOSE pending.
	.... 1...	UCMTA	OPEN pending.
	.... .1..	UCMTB	Dequeue appropriate output queue entries.
	.... ...1	UCMTD	Console has inline WTO.
	.... ..X.		Reserved bit.

2. UCMATR 25 (19)	1... .. .1.. .. ..1. .. ...1 1.. .... .1.. .... ..xx	UCMOF UCMIF UCMXF UCMUF UCMLF UCMAT04	Attribute flags: WTO support. Attention support. External interrupt support. Device active. Load flag. Device status to change. Reserved bits.
3. UCMAUTHA 40 (28)	1... .. .1.. .. ..1. .. ...x xxxx	UCMAUTH1 UCMAUTH2 UCMAUTH3	Command code authorization flags: Command group 1 (system). Command group 2 (I/O). Command group 3 (console). Reserved bits.
4. UCMDISP1 42 (2A)	1... .. .1.. .. ..1. .. ...1 1.. .... .1.. .... .1.. .... ...1	UCMDISPA UCMDISPB UCMDISPC UCMDISPD UCMDISPE UCMDISPF UCMDISPG UCMDISPH	Disposition flags: Master console. Hardcopy device/console. Graphics. Output only. Console has full I/O capability. Console is message stream only. Console is status display only. Integrated operator's console (VS2 only).
5. UCMMSG1 60 (3C)	1... .. .1.. .. ..1. .. ...1 1.. .... .1.. .... ..xx	UCMMSGA UCMMSGB UCMMSGC UCMMSGD UCMMSGE UCMMSGF	Message flags: Display jobnames requested. Display status requested. Monitor active requested. RESQID requested. SHOW requested under CRJE. MONITOR SESS requested. Reserved bits.
6. UCMDEVC 63 (3F)	1... .. .1.. .. ..1. .. ...1 1.. .... .1.. .... .1.. .... ...1	UCMDEVA UCMDEV8 UCMDEVCC UCMDEVDD UCMDEVE UCMDEVF UCMDEVG UCMVHRSN	Device control flags: Full screen on graphics consoles. PREPARE command issued. Console switch indicator. DOM issued. I/O complete. DCM modified for DOM. HIO issued on the 2740. Console I/O path affected (VS2 only).
7. UCMSDS5 68 (44)	1... .. .1.. .. ..1. .. .... .1.. .... .1.. .... ..xx	UCMSDS5A UCMSDS5B UCMSDS5C UCMSDS5F UCMSDS5G	SDS flags: MLWTO line needed to keep writing. Inline output pending. Out-of-line output pending. UCMMLAST valid (CRT). I/O hardware in output only status. Reserved bits.

Volume Label

A volume label is 80 characters long and identifies the volume and its owner.

On magnetic tape volumes, the volume label is the first record on the tape. On nine-track tape it is written in EBCDIC, on seven-track tape in BCD.

On direct access volumes, it is record number three, following the two IPL records. It is recorded as an 84 byte physical record consisting of a 4 byte key area containing 'VOL1', and an 80 byte data area. Both areas are written in EBCDIC.

IBM Standard Volume Label

0 (0)	VOLLABI - label identifier - VOL	3 (3) VOLNO volume label sequence number
4 (4)	VOLSERNO - volume serial number (1 to 6 characters, left-justified, padded with blanks if necessary)	
	10 (A) reserved - must be recorded as X'F0'	11 (B)
	VOLVTOC - DASD: CCHHR address of the VTOC DSCB on this volume Magnetic Tape: reserved - must be recorded as blanks	
16 (10)	reserved - must be recorded as blanks	
	41 (29) VOLOWNER - name and address code of the installation or user	
40 (28)		
		51 (33)
	reserved - must be recorded as blanks	

American National Standard Volume Label

<p>0 (0)</p> <p>VOLLABI - label identifier - VOL</p>	<p>3 (3)</p> <p>VOLNO - volume label sequence number</p>
<p>4 (4)</p> <p>VOLSERNO - unique identification permanently assigned by the owner to identify this physical volume</p>	
<p>10 (A)</p> <p>X'40' = unlimited access; otherwise vol protected and will not be processed</p>	<p>11 (B)</p>
<p>reserved - must be recorded as spaces</p>	
<p>36 (24)</p>	<p>37 (25)</p>
<p>AVOLOWNR - owner of the physical volume</p>	
	<p>51 (33)</p>
<p>reserved - must be recorded as spaces</p>	
<p>78 (4E)</p>	<p>79 (4F)</p> <p>X'01' = labels and data formats conform to standard</p>

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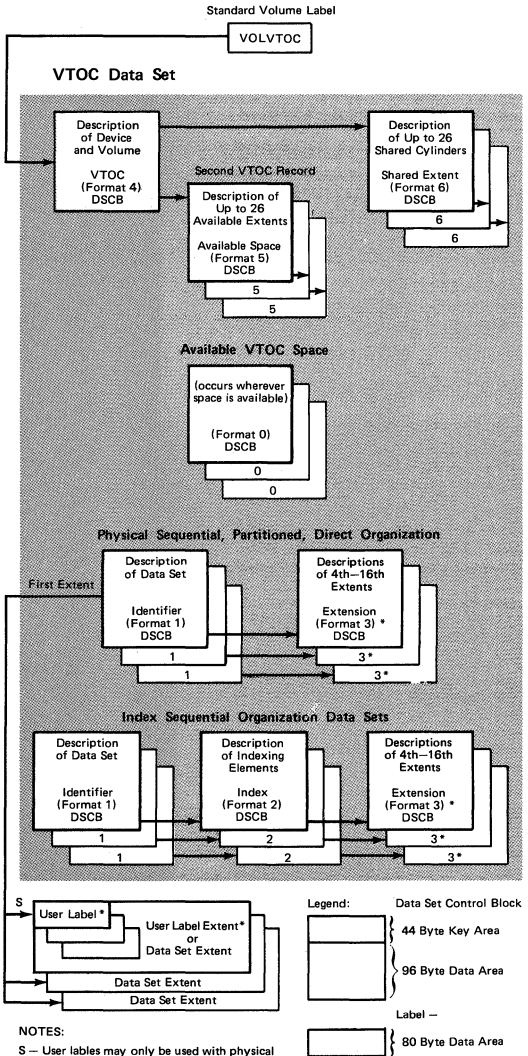


Figure 3. Volume Table of Contents



Glossary of Acronyms

The following terms are defined as they are used in this book. If you do not find the term you are looking for, refer to the *IBM Data Processing Glossary, GC20-1699*.

Acronym	Definition
AIX	Alternate Index
AMBL	Access Method Block List
APCB	Associated Page Control Block
APF	authorized program facility
ASA	American Standards Association
ASIR	Abend/STAE Interface Routine
ATTN	attention
BOE	beginning of extent
BTAM	Basic Telecommunications Access Method
CAXWA	catalog auxiliary work area
CCW	channel command word
CDB	contents directory block
CIB	command input buffer
CPU	central processing unit
CRC	cyclic redundancy check
CRJE	conversational remote job entry
CSW	channel status word
DADSM	direct access device space management
DAR	damage assessment routine
DASD	direct access storage device
DNT	device name table
DOM	delete operator message
DSD	data set descriptor
DSO	Direct System Output
DSOCB	Direct System Output Control Block
DSORG	data set organization
DSS	Dynamic Support System
EIL	event indication list
EOD	end of data
EOEA	end of extent appendage
EOM	end of message
EOT	end of transmission
EOV	end of volume
ERP	error recovery program
ESV	error statistics by volume
EVA	error volume analysis
FCB	forms control buffer
FLIH	first level interrupt handler
FRID	format record ID
GFX	graphics interface task
GTF	generalized trace facility
IBCT	Interface Buffer Control Table
ICNCB	intelligent controller node control block
ILC	instruction length code
IOEL	I/O extended logout

IOS	I/O supervisor
IPL	initial program load
J ECS	job entry control system
J EPS	job entry peripheral services
J ES	job entry subsystem
J MR	job management record
J PAQ	job pack area queue
LCT	linkage control table
LPA	link pack area
LSQA	Local System Queue Area
LT TDS	long-term temporary data sets
MCS	multiple console support
MSS	Mass Storage System
NIB	nucleus initialization block
NIP	Nucleus Initialization Program
NL	no label
NSL	nonstandard label
OBR	outboard recording
ORE	operator reply element
PCBE	page control block entry
PQA	protected queue area
PQE	pageable queue element
PSS	process scheduling services
QID	queue identification
RBA	relative byte address
RCT	Record Control Table
RLD	Relocation List Dictionary
RLN	relative line number
RMS	recovery management support
RPS	rotational position sensing
RST	real storage table
RTAM	Remote Telecommunications Access Method
RU	request unit
RVT	Recovery Vector Table
SCB	STAE control block
SIR	service interface routine
SJQ	system job queue
SL	standard label
SMF	system management facilities
SOH	start of header
SQA	system queue area
SSI	system status information
TCAM	Telecommunications Access Method
TOD	time-of-day
TRCB	Trace Control Block
TRCB	trace record continuation block
TTR	track track record
TTRN	track.track.record, concatenation number
UCS	universal character set
VSAM	Virtual Sequential Access Method
VTAM	Virtual Telecommunications Access Method
WTTA	World Trade Telegraph Appendage

Indexes to OS/VS1 publications are consolidated in the *OS/VS1 Master Index of Logic*. This master index references other publications that contain additional information about the subjects listed here.

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